Gateway®

User Guide

Gateway 9315 Server

Contents

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Chapter 1

Checking Out Your Gateway Server

- Locating drives, ports, jacks, and controls
- Locating system board components
- Available help resources

Front

CD or DVD
drive   Hard drive   Hard drive   Hard drive   Control
panel

Control panel

LAN 1 activity indicator   Power
button   Hard drive
activity LED   System ID
button

LAN 2 activity indicator   Power/
sleep
LED   System
fault LED   System ID
LED

Video port   Reset
button

Non-maskable interrupt
button (recessed)   USB port

Back

Low-profile PCI
expansion card

Full-height PCI
expansion card

Serial number

I/O panel

Power connector

Power supply

I/O panel

Keyboard
port

LAN jacks

USB ports

Diagnostic
LEDs

System
ID LED

PS/2 mouse
port

RJ-45
serial
port

Video port

Interior

CPU 2 socket

DIMM slots   CPU 1 socket

Processor air duct

Fan module

PCI riser
assembly

Power supply

Drive bays

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System board

Connectors - right side

CPU 2 fan header
CPU 1 fan header
CPU 1 socket
CPU 2 socket

+12V CPU power connector
Fan board connector
Diskette connector
PCI fan connectors
IDE connector
100-pin floppy/front panel/ATA connector
Main power connector
50-pin front panel connector
34-pin front panel connector

IDE power connector

Front panel USB header
OEM RMC connector
Power supply connector
SATA 0 connector
SATA 1 connector
Configuration jumpers

Connectors - left side

DIMM slots

Mouse (top) and Keyboard

Serial port B (RJ-45)

LAN 1

LAN 2

Video

USB 1

USB 2

PCI riser card (low-profile)

Diagnostic LEDs (4)

PCI riser card (full-height)

ID LED

Battery

Serial port A header

Chassis intrusion header

BIOS select jumper

Getting Help

In addition to your operating system's documentation, you can use the following information resources to help you use your server.

System Companion CD

Use the *System Companion CD* to access file utilities, Windows 2003 Server drivers, and documentation for your server and its components. For more information, see *Using Your System Companion CD*.

Gateway Web site

Gateway provides a variety of information on its Web site to help you use your server.

Visit the Gateway Web site at support.gateway.com for:

- Technical documentation and product guides
- Technical tips and support
- Updated hardware drivers
- Order status
- Frequently asked questions (FAQs)

Telephone support

You can access a wide range of services through your telephone, including customer service, technical support, and information services. For more information, see "Telephone support" on page 102.

Chapter 2

Setting Up Your Server

- Using your server safely
- Installing your server into a cabinet
- Starting and turning off your server
- Setting up your operating system

Setting up the hardware

To make sure that your working environment is safe:

■ Use a clean, dry, flat, stable surface for your server. Allow at least 6 inches at the back of the server for cabling and air circulation.

■ Use the instructions on your server's setup poster to set up your hardware.

■ Use a grounded (three-prong) surge protector. A surge protector helps protect against AC power fluctuations. For additional protection from power outages, we recommend that you use an uninterruptible power supply (UPS).

Warning	Your server comes with a 3-wire AC power cord fitted with the correct plug style for your region. If this plug does not match the connector on your surge protector, UPS, or wall outlet, do not attempt to modify the plug in any way. Use a surge protector, UPS, or wall outlet that is appropriate for the supplied AC power cord.

■ Avoid subjecting your server to extreme temperature changes. Do not expose your server to direct sunlight, heating ducts, or other heat-generating objects. Damage caused by extreme temperatures is not covered by your warranty. As a general rule, your server is safest at temperatures that are comfortable for you.

■ Keep your server and magnetic media away from equipment that generates magnetic fields, such as unshielded stereo speakers. Strong magnetic fields can erase data on both diskettes and hard drives. Even a telephone placed too close to the server may cause interference.

Important	Keep the server boxes and packing material in case you need to ship the server.

Protecting from power source problems

Surge protectors, line conditioners, and uninterruptible power supplies can help protect your server against power source problems.

Surge protectors
During a power surge, the voltage level of electricity coming into your server can increase to far above normal levels and cause data loss or server damage. Protect your server and peripheral devices by connecting them to a surge protector, which absorbs voltage surges and prevents them from reaching your server.

Warning	High voltages can enter your server through the power cord, and the modem and network connections. Protect your server by using a surge protector. If you have a modem, use a surge protector that has the appropriate type of modem jack. During an electrical storm, unplug the surge protector and the modem and network cables.

When you purchase a surge protector:

■ Make sure that the surge protector meets the appropriate product safety certification for your location, such as Underwriters Laboratories (UL).

■ Check the maximum amount of voltage the protector allows to pass through the line. The lower the voltage that the protector allows to pass through, the better the protection for your server.

■ Check the energy absorption (*dissipation)* rating. The higher the energy absorption rating, the better the protection for your server.

■ Check for line-conditioner capabilities. A line conditioner smooths out some of the normal line noise (small voltage fluctuations) of an electrical supply.

Line conditioners
A line conditioner protects your server from the small fluctuations in voltage from an electrical supply. Most servers can handle this variation, called *line noise,* without problems. However, some electrical sources include more line noise than normal. Line noise can also be a problem if your server is located near, or shares a circuit with, a device that causes electromagnetic interference, such as a television or a motor.

Some surge protectors and uninterruptible power supplies include simple line-conditioning capabilities.

Uninterruptible power supplies
Use an uninterruptible power supply (UPS) to protect your server from data loss during a total power failure. A UPS uses a battery to keep your server running temporarily during a power failure and lets you save your work and shut down your server. You cannot run your server for an extended period of time while using only the UPS. To buy a UPS, visit accessories.gateway.com.

Mounting your server into a cabinet

The cabinet mounting hardware included with your server should be used with EIA-310-D standard 4-post cabinets that have front and back vertical posts. The L-shaped cabinet mounting brackets can be used for mid-mounting on a 2-post cabinet, but that procedure is not covered here. If your cabinet is a different type, obtain mounting hardware from the cabinet manufacturer.

Caution ⚠️	Before attaching cabinet accessories, make sure that the server is turned off and all power cords are unplugged.

Caution ⚠️	The cabinet must provide sufficient airflow to the front of the server to maintain correct cooling. It must also include ventilation sufficient to exhaust a maximum of 1200 BTUs per hour for this server.

Rackmount kit contents:

- Server rails (2)
- Cabinet rails (2)
- L brackets (2, not used for this type of installation)
- Fastener pack (1)
    - Small screws (4, #6-32 × 3/16-inch)
    - Medium screws (8, #10-32 × ½-inch)
    - Large screws (2, #10-32 × 7/8-inch)
    - Disk guides (2)
    - Handle spacers (2)
    - Nut bars (4)

1 Remove the two screws from each handle, then set the handles and screws aside.

2 Align the slots in a server rail with the studs on the side of the server, then engage the slots with the studs and slide the rail back until it stops. (Your server may be different than the server shown in the example.)

Locking screw hole

Server rail

Slot

Locking screw hole

Mounting stud

Locking screw hole

Slot
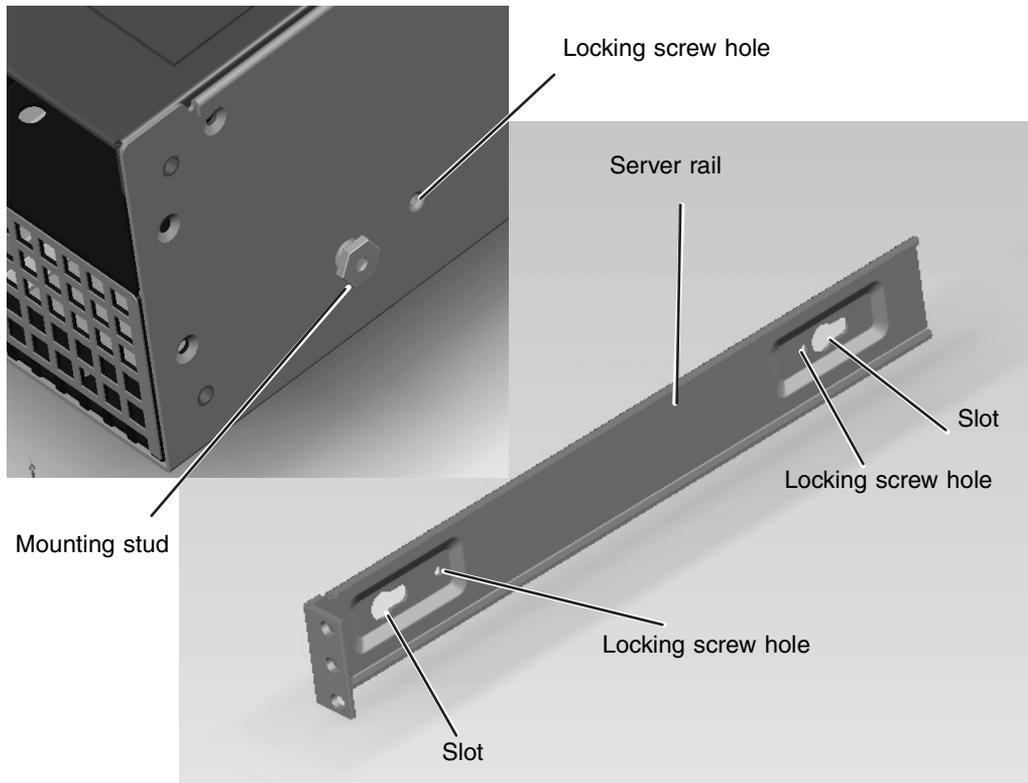
3 Align the locking screw holes in the rails with the threaded screw holes in the server, then install the two locking screws through each rail.

4 Place a disk guide over the disk guide screw hole towards the back of the server.

Disk guide screw hole

5 Install a small screw through the disk guide and tighten the screw. Attach the remaining disk guide on the other side of the server.
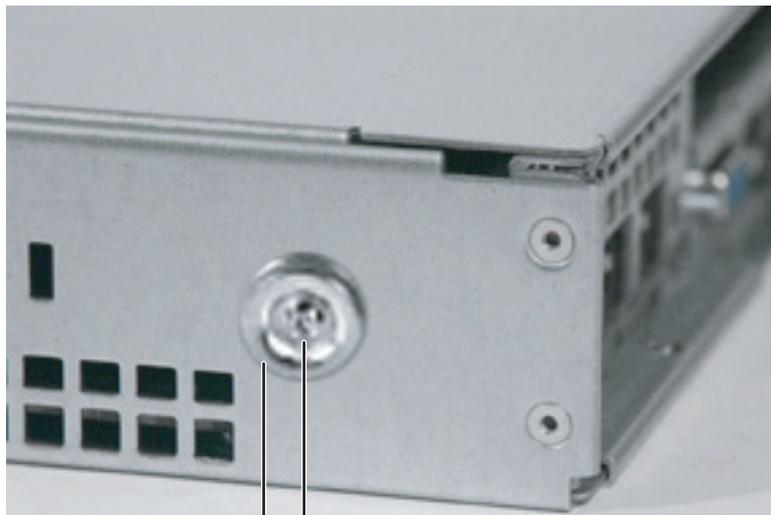
Disk guide

Disk guide screw

6 Attach a nut bar to the inside of the two back cabinet posts using medium screws, but do not completely tighten the screws (leave them loose enough to allow insertion of the cabinet rail in the next step).

7 Insert the slotted foot at the back of each cabinet rail between the nut bar and the post, then tighten the screws.

8 With the front of the server facing you, lift the server and insert it into the cabinet from the front, then position the disk guides so they fit into the cabinet rails. (Your server may be different than the server shown in the example.)

9 Install a nut bar or mounting nuts on the front cabinet posts.

Nut bar or mounting nuts

10 Push the server toward the back of the cabinet until the front of the server rails touch the front cabinet posts, then secure with two screws through each server rail.

- OR -

Follow the instructions in "Installing the bezel" on page 18 to attach both handles and secure the server into the cabinet.

| **Warning** | You must support the server while installing or removing the front screws and while sliding the server on or off the cabinet rails. If the server is not supported, damage to the server or injury may result. |

Installing the bezel

Important

The bezel is held in place by the server handles. The handles are also used to slide the server in and out of the rack cabinet when mounted using the optional rails.

▶ To install the bezel:

1   With the server pulled out from the cabinet, align the holes in the handle with the holes in the front side of the server.

2   Attach the handles to the sides of the server with two mounting screws on each side. (Your server may be different than the server shown in the example.)

Mounting screw

Mounting screw
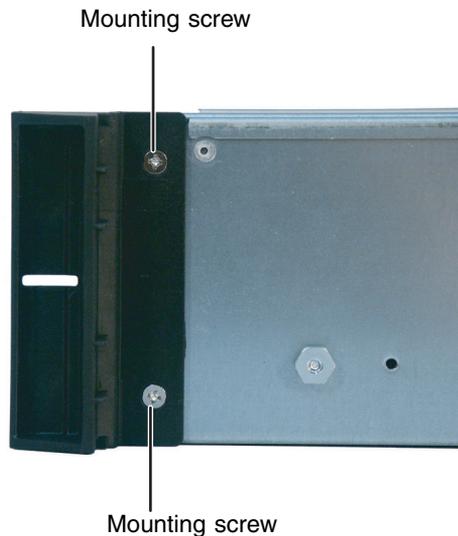
3   Push the server, with the handles attached, into the cabinet to determine which holes in the front posts of the cabinet that the holes in the handles will line up with.

4   Install the mounting nuts (nuts equipped with spring clips that come with most server cabinets) into the holes in the front posts of the cabinet.

5   Push the server into the cabinet again.

6 Use a screw through each handle to secure the server to the cabinet posts.

7 Remove the bezel lock keys from the inside of the bezel, then snap on the bezel with the control panel area at the right.

8 To lock the bezel, insert the key into the lock and rotate it ¼ turn clockwise. To unlock it, rotate the key ¼ turn counter-clockwise.

Removing the server from a cabinet

 To remove the server from a cabinet:

| **Warning** 	Screws are required to support the front of the server. You must support the server while removing the front screws and while sliding the server off the cabinet rails. If the server is not supported, damage to the server or injury may result.

1 Remove the screws through the handles that hold the server in the cabinet.

2 While supporting the server, slide the server out from the cabinet.

Starting your server

Before you start your server for the first time:

■ Make sure that the server and monitor are plugged into a power outlet or surge protector and that the surge protector (if you are using one) is turned on.

■ Make sure that all cables are connected securely to the correct ports and jacks on the back of the server.

Caution	When you connect peripheral devices to the server, make sure that your server and devices are turned off and the power cords are unplugged.

▶ To start the server:

1 Turn on any peripheral devices connected to the server.

2 Press the power button.

Power LED

Power button   System fault LED

Reset button
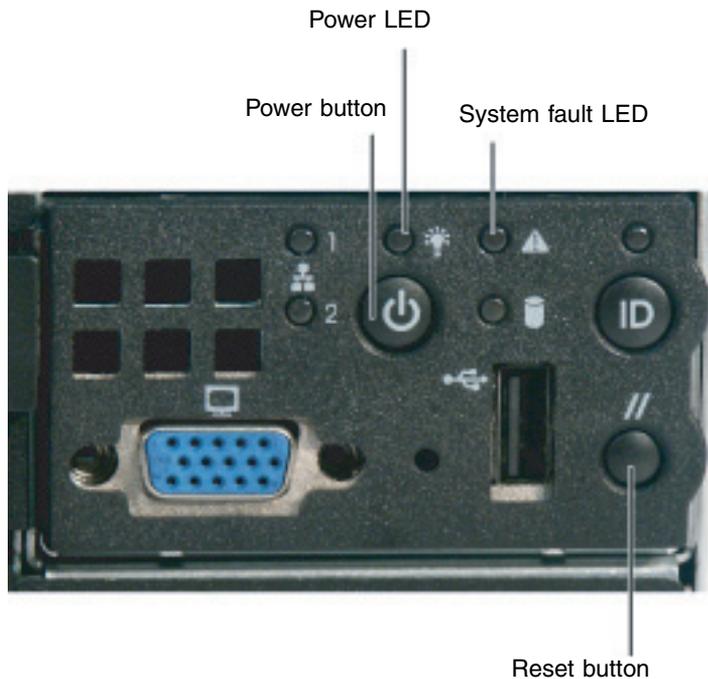
When the power LED is…	It means…
Green (steady on)	The server is turned on.
Green (blinking)	The server is in sleep mode.
Off	The server is turned off.

When the system fault LED is…	It means…
Green (steady on)	The server is operating normally.
Green (blinking)	The server is operating in a degraded condition.
Orange (steady on)	The server is in a critical or unrecoverable condition.
Orange (blinking)	The server is in a noncritical condition.
Off	POST failure or full system stop.

If nothing happens when you press the power button:

■ Make sure that the power cable is plugged in securely and that your surge protector (if you are using one) is plugged in and turned on.

■ Make sure that the monitor is connected to the server, plugged into the power outlet or surge protector, and turned on. You may also need to adjust the monitor's brightness and contrast controls.

■ Wait 5-10 seconds after plugging the power cord into the server before pressing the power button. This allows the internal monitoring and control hardware to initialize.

■ If you cannot find the cause of the power loss, contact Gateway Customer Care. For more information, see "Getting Help" on page 7.

3 The first time you turn on the server, any pre-installed operating system may begin asking you for configuration settings. See your operating system's documentation for instructions on configuring advanced settings for your specific network.

Understanding the power-on self-test

When you turn on your server, the power-on self-test (POST) routine checks the server memory and components. If POST finds any problems, the server displays error messages. Write down any error messages that you see, then see "Error messages" on page 105 and "Beep codes" on page 108 for troubleshooting information.

Turning off your server

Every time you turn off your server, first shut down the operating system. You may lose data if you do not follow the correct procedure.

To turn off the server:

1 See the operating system's documentation or online help for instructions on shutting down the operating system. Whenever possible, you should use the operating system's shut down procedure instead of pressing the power button.

Warning	The power button on the server does not turn off server AC power. To remove AC power from the server, you must unplug the AC power cord from the wall outlet or power source. The power cord is considered the disconnect device to the main (AC) power.

2 If your server did not turn off automatically, press the power button.

- OR -

Press the reset button to reset the server.

Configuring the RJ-45 serial port

The RJ-45 serial port connector can be configured to support either a Data Set Ready (DSR), or a Data Carrier Detect (DCD) signal. The default configuration for your server supports DSR signals. To change the configuration from DSR to DCD signal support, a jumper (J8A3) must be changed on the system board.

▶ **To change the RJ-45 serial port configuration to DCD signal support:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

> **Caution**
> ⚠
>
> Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cords and all other cables before changing the jumper.

3 Remove the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

4 Remove the jumper across pins 1-3 of jumper J8A3, then place the jumper across pins 2-4.

J8A3
3 4
1-3: DCD to DTR (Default)
2-4: DSR to DTR
▲ 2
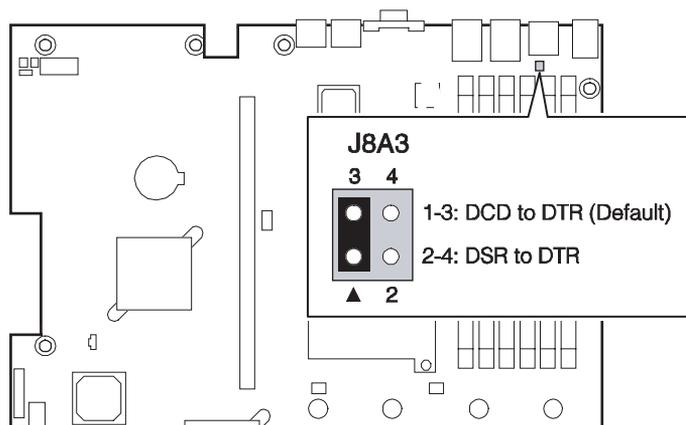
5 Reinstall the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

6 Follow the instructions in "Closing the server case" on page 39.

■

Setting up the operating system

If you ordered your server with the operating system already installed by Gateway, in most cases it is completely installed and the basic settings are already configured. The Windows Small Business Server operating system may require additional installation, depending on the version you ordered. See your operating system's documentation for instructions on completing the installation or configuring advanced settings for your specific network.

If you are installing an operating system because it was not already installed by Gateway, see the appropriate installation guide for instructions.

Initial hardware settings

Your server comes from the manufacturer with the correct initial hardware settings to operate your server as configured. However, at some point you might want to change settings to reflect a tasking change, a change in security requirements, or the addition of new resources to your server.

General hardware settings, as well as enabling or disabling the onboard LSI RAID solution, can be changed by using the BIOS Setup utility, and the RAID solution can be configured by using the RAID BIOS console (or the specific RAID console which accompanied a customized, add-in RAID solution).

For information on the BIOS Setup utility, see "Using the BIOS Setup Utility" on page 91. For information on BIOS settings, see "BIOS Settings" on page 131. For information on the RAID BIOS console utility, see "Configuring your onboard RAID solution" on page 61. For information on a specific RAID console for an add-in RAID solution, see the documentation on that hardware which accompanied your server.

Chapter 3

Maintaining Your Server

- Caring for your server
- Recording the BIOS configuration
- Managing your server and network

Caring for your server

To extend the life of your server:

■ Be careful not to bump or drop your server.

■ When transporting your server, we recommend that you put it in the original packaging materials.

■ Keep your server and magnetic media away from equipment that generates magnetic fields, such as unshielded speakers.

■ Avoid subjecting your server to extreme temperatures. Do not expose your server to heating ducts or other heat-generating objects. Damage caused by extreme temperatures is not covered by your warranty. As a general rule, your server is safest at temperatures that are comfortable for you.

■ Keep all liquids away from your server. When spilled onto server components, almost any liquid can result in extremely expensive repairs that are not covered under your warranty.

■ Avoid dusty or dirty work environments. Dust and dirt can clog the internal mechanisms and can cause the server to overheat.

Cleaning your server

Keeping your server clean and the vents free from dust helps keep your server performing at its best. Your server cleaning kit could include:

■ A soft, lint-free cloth

■ Glass cleaner

■ An aerosol can of air with a narrow, straw-like extension

■ Isopropyl alcohol

■ Cotton swabs

■ A CD drive cleaning kit

Cleaning tips

■ Always turn off your server and other peripheral devices before cleaning any components.

Warning

When you shut down your server, the power turns off, but some electrical current still flows through your server. To avoid possible injury from electrical shock, unplug the power cord and all other cables connected to the server.

- ■ Use a damp, lint-free cloth to clean your server and other parts of your server system. Do not use abrasive or solvent cleaners because they can damage the finish on components.

- ■ Keep the cooling vents free of dust. With your server turned off and unplugged, brush the dust away from the vents with a damp cloth, but be careful not to drip any water into the vents.

Cleaning the keyboard

You should clean the keyboard occasionally by using an aerosol can of air with a narrow, straw-like extension to remove dust and lint trapped under the keys.

If you spill liquid on the keyboard, turn off your server and turn the keyboard upside down to let the liquid drain. Let the keyboard dry completely before trying to use it again. If the keyboard does not work after it dries, you may need to replace it. Keyboard damage resulting from spilled liquids is not covered by your warranty.

Cleaning the screen

If your computer screen is a flat panel display, use only a damp, soft cloth to clean it. Never spray water directly onto the screen.

Caution

The computer screen is made of specially coated glass and can be scratched or damaged by abrasive or ammonia-based glass cleaners.

- OR -

If your computer screen is not a flat panel display, use a soft cloth dampened with glass cleaner to clean the screen. Never spray cleaner directly onto the screen.

Preparing for system recovery

If your system files are corrupted, you may not be able to start the server from the hard drive. *Startup diskettes* are diskettes that let you start the server and attempt to fix the problem. See your operating system's documentation or online help for instructions on creating startup diskettes.

Some operating systems also let you create an emergency repair diskette to back up critical operating system files. See your operating system's documentation or online help for instructions on creating and using an emergency repair diskette.

Recording the BIOS configuration

To help keep track of your custom changes to BIOS settings and to prepare for system recovery, you should record your BIOS configuration after you have your server set up and working.

To record your BIOS configuration:

1 Print the appendix for "BIOS Settings" on page 131.

2 Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

3 Record the BIOS settings on your printout.

System administration

Gateway Systems Manager

Gateway Systems Manager lets you manage multiple computers on a Windows™ network from a single window, then implement commands and policies across the network with a single action. With Gateway Systems Manager, you can run system management tasks which are triggered by certain events or conditions.

Printed documentation comes with the *Gateway Systems Manager* CD. You can find additional documentation in the program's online help.

Server security

Locking the server

▶ To lock the server:

1 Remove the bezel lock keys from the inside of the bezel, then snap on the bezel. The handles must be installed for the bezel to snap on. For instructions, see "Installing the bezel" on page 18.

2 Insert the key into the lock and rotate it ¼ turn clockwise. To unlock it, rotate the key ¼ turn counter-clockwise.

Using BIOS security passwords

To prevent unauthorized use of the server, you can set server startup passwords. Set up an administrator password to prevent unauthorized access to the BIOS Setup utility.

For information about resetting BIOS passwords, see "Resetting BIOS passwords" on page 98.

▶ To set the BIOS security passwords:

1 Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

2 Select the **Security** menu.

3 Select **Administrator Password**.

4 Type the password and press ENTER, then type it again and press ENTER.

5 Save your changes and close the BIOS Setup utility.

⏹️

▶️ **To remove a BIOS security password:**

1 Restart your server, then press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

2 Select the **Security** menu, then select the password to remove.

3 Enter the current password, then press ENTER.

**4** For the new password, leave the password field blank, then press ENTER. The password is removed.

Tips & Tricks	Passwords can also be cleared using jumpers on the system board. For instructions, see "Resetting BIOS passwords" on page 98.

⏹️

Identifying your server

While you are working on a cabinet that contains several slim servers, it can be difficult to keep track of which server or servers you are currently working on. The System ID indicator is a blue LED that you can turn on to help you locate the correct server. Your server has a System ID indicator in the front and in the back. In addition to the following procedure, the ID LED can also be turned on by using the Gateway Systems Manager software.

▶ To turn on the System ID LEDs:

1 Press the System ID button. The two blue System ID LEDs turn on.

System ID LED

System ID button
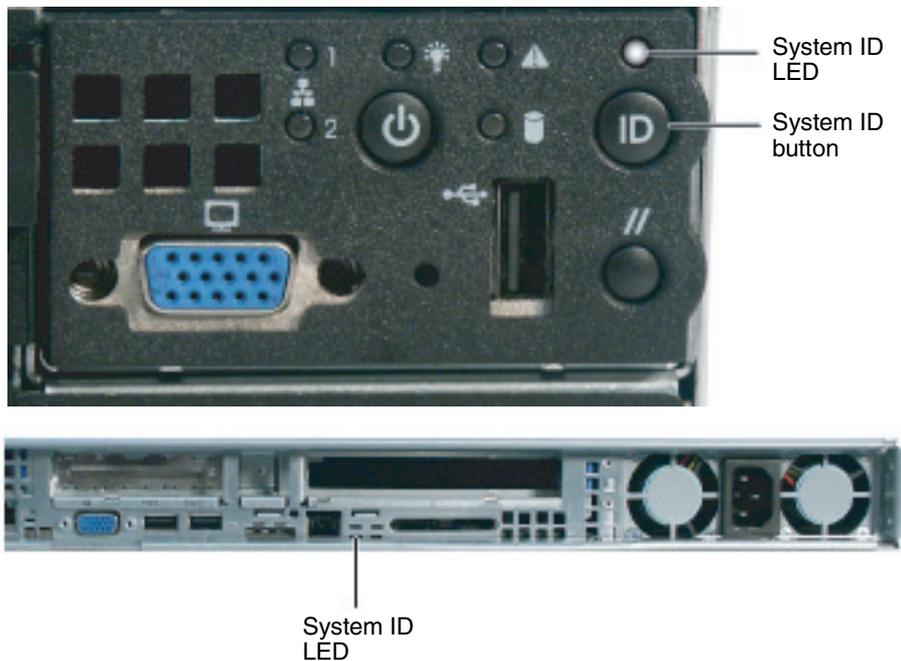
System ID LED

For the System ID LEDs to turn on, the server does not need to be turned on, but it does need to be plugged in.

2 To turn off the LEDs, press the System ID button.

Updating the baseboard management controller firmware

The baseboard management controller (BMC) performs several system management functions such as:

- Monitoring server components (FRU) and sensor data records (SDR) (the information provided depends on the option selected)
- Managing nonvolatile storage for the system event log and sensor data records
- Interfacing with the emergency management port to send alerts and interact with remote management systems.
- Fault resilient booting (the extent depends on the option selected).

You should update the BMC firmware when Gateway Customer Care has instructed you to update it.

To update the BMC firmware:

1 Create a DOS-bootable USB *Disk-on-key* device or a DOS-bootable CD.

2 Download the BMC update file from support.gateway.com.

3 Follow the instructions included with the update file.

Updating the FRU/SDR

The FRU/SDR must be updated whenever you add additional hardware to your server that must be monitored by the BMC or whenever you update the BIOS. Each time you update the FRU/SDR, we recommend that you check support.gateway.com for the most current version of the utility. If a newer version is available than the one included on the SCCD, download the newer version and use it instead of the SCCD. Follow the instructions in the readme.txt file that accompanies the utility, or proceed with the following.

To update the FRU/SDR:

1 Boot your server to DOS (using a DOS-bootable diskette, CD, or USB disk-on-key device).

2 Put the *System Companion CD* in the CD drive and change directories (to the CD drive) to access it.

3 When the System Companion CD menu opens, select the FRU/SDR utility.

4 Select one of the following options (if in doubt, choose the second option and update both):

Update just the SDR repository - Select this option when sensor information needs to be changed. For example, if the CPU is upgraded to a higher speed or if memory is replaced.

-OR-

Update the FRUs and the SDR repository - Select this option if have installed additional hardware. For example, additional memory.

5 Exit the utility, remove the *System Companion CD*, then reboot your server.

⬛

Using your System Companion CD

You can use your *System Companion CD* to:

■   Install hardware drivers

■   Install programs

■   View server documentation

Instructions for using the CD are provided in *Using Your System Companion CD*.

Chapter 4

Installing Components

- Opening and closing the server case
- Installing and replacing major server components

Preparing to install components

Selecting a place to work

Work on your server in an area that:

- Is clean (avoid dusty areas)
- Is a low-static environment (avoid carpeted areas)
- Has a stable surface on which to set your server
- Has enough room to place all of your server parts
- Is near a grounded outlet so you can test your server after installation
- Is near a telephone (in case you need help from Gateway Customer Care). The telephone must be directly connected to a telephone jack and cannot be connected to your server.

Gathering the tools you need

Some tools and supplies that you may need to work on your server are:

- A notebook to take notes
- A Phillips screwdriver
- A small flat-blade screwdriver
- Small containers to store various types of screws
- A grounding wrist strap (available at most electronic stores)

Getting Help

If you have questions about performing any of these procedures, contact Gateway Customer Care. For more information, see "Getting Help" on page 7.

Preventing static electricity discharge

The components inside your server are extremely sensitive to static electricity, also known as *electrostatic discharge* (ESD).

Warning	To avoid exposure to dangerous electrical voltages and moving parts, turn off your server and unplug the power cord and modem cable before opening the server case.

Caution	ESD can permanently damage electrostatic discharge-sensitive components in the server. Prevent ESD damage by following ESD guidelines every time you open the server case.

Before working with server components, follow these guidelines:

- Turn off the server, then unplug the power cords and all other cables.

- Press the power button to drain any residual power from the server.

- Wear a grounding wrist strap (available at most electronics stores) and attach it to a bare metal part of the server. You can also touch a bare metal surface on the back of the server with your finger.

Warning	To prevent risk of electric shock, do not insert any object into the vent holes of the power supply.

- Avoid static-causing surfaces such as carpeted floors, plastic, and packing foam.

- Avoid working on the server when your work area is extremely humid.

- Remove components from their antistatic bags only when you are ready to use them. Do not lay components on the outside of antistatic bags because only the inside of the bags provide electrostatic protection.

- Always hold expansion cards by their edges or their metal mounting brackets. Avoid touching the edge connectors and components on the cards. Never slide expansion cards or components over any surface.

Opening the server case

Because the components inside your server are extremely sensitive to static electricity, make sure that you follow the instructions at the beginning of this chapter to avoid static electricity damage.

| **Caution**	For correct cooling and air flow, always reinstall the top panel before you turn on the server. Operating the server without the panel in place will cause the server to overheat.

To open the server:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure you turn off the server, then unplug the power cord and all other cables connected to the server.

2 If the bezel is installed, unlock it, then pull it off.

3 If the server is mounted in a cabinet, remove the server from the cabinet. For instructions, see "Removing the server from a cabinet" on page 19.

Warning	Screws are required to support the front of the server when using the standard cabinet rails. You must support the server while removing the front screws and while sliding the server off the cabinet rails. If the server is not supported, damage to the server or injury could result.

4 Place the server on a stable, non-skid surface.

5 Remove the shipping screw (if one is installed).

6 Press and hold the panel release button, then slide the top panel toward the back of the server about 1/2 inch.

Panel release button
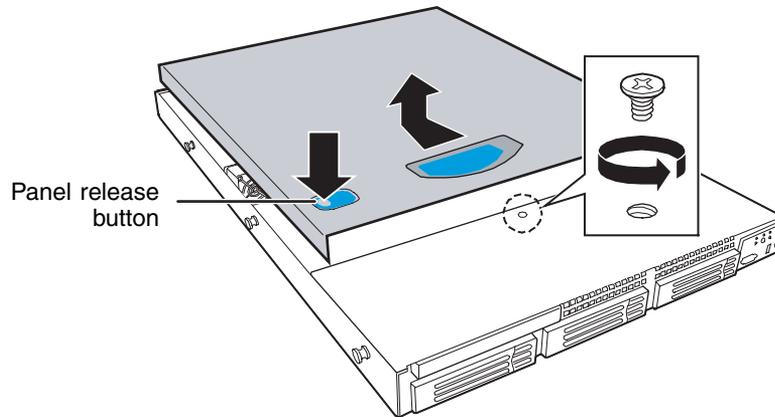
7 Lift the top panel away from the server.

# Closing the server case

Caution

Whenever you add or remove components from your server, make sure that the various cables, both data and power, are routed correctly before reinstalling the top panel. Incorrectly routed cables could result in cable damage, fan blockage, misalignment of baffles and ducts, and incorrect airflow within the server.

To close the server case:

1 Make sure that all of the internal cables are arranged inside the case so they will not be pinched when you close the case.

2 Slide the top panel's edges into the server.

**3** Slide the top panel toward the front of the server until it clicks into place.
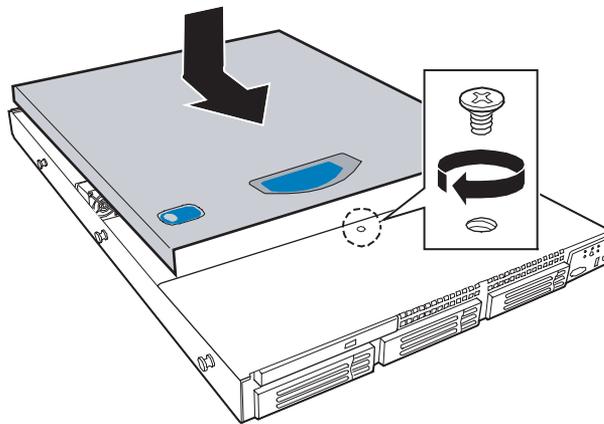
4 Replace the shipping screw (if required).

5 Replace the bezel (if required).

6 Reconnect the power cord and all other cables.

Removing and installing air ducts, air dams, and baffle

Your server has been engineered to provide correct airflow in the chassis for sufficient cooling of drives, processors, and power supplies. As your server configuration changes, the airflow within the chassis will need to be modified to accommodate those changes.

| Caution	To ensure continued, reliable operation, always operate your server with the appropriate air ducts, air dams, and baffle in place. Failure to do this could result in equipment damage due to incorrect cooling.

Removing the processor air duct

The processor air duct normally covers the portion of the system board that includes the processor(s) and the memory. The duct will need to be removed if you need to add or remove a processor or memory in your system or if you need to replace the system board.

▶ To remove the processor air duct:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make that sure you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Lift the processor air duct from the chassis.
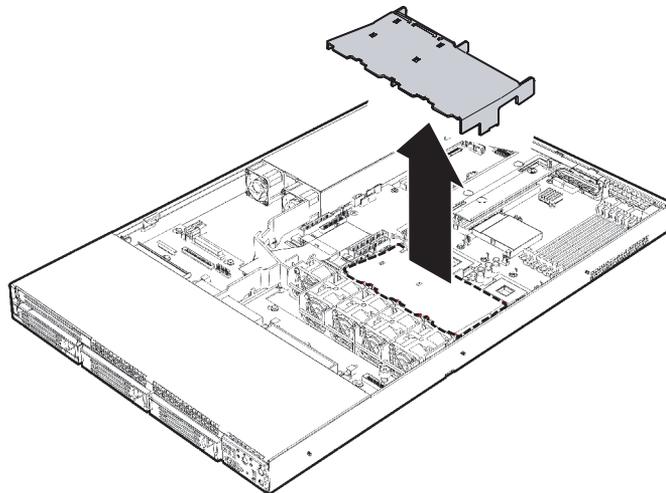
Installing the processor air duct

1 Place the processor air duct over the CPU sockets. The front edge of the air duct should contact the fan module and the top of the installed air duct should be flush with the top of the power supply.
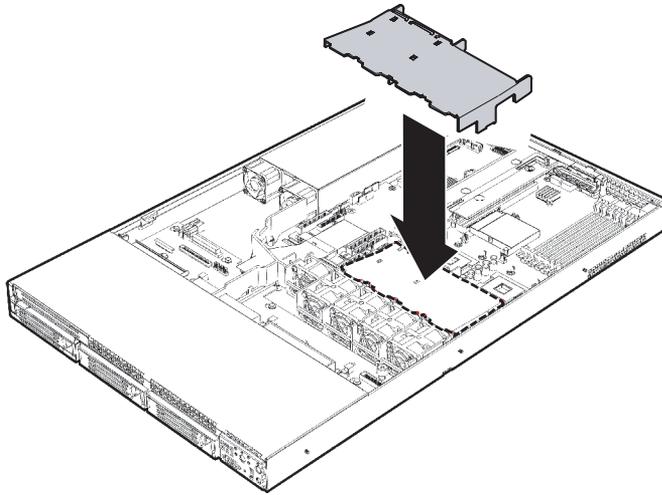
2 Follow the instructions in "Closing the server case" on page 39.

■

Removing the air baffle

Caution

⚠

To ensure continued, reliable operation, always operate your server with the appropriate air ducts, air dams, and baffle in place. Failure to do this could result in equipment damage.

**1** Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

Important

Take note of the cable routing under and around the air baffle. You will need to re-route these cables when the baffle is reinstalled.

3 Pull up on the air baffle to remove it from the server chassis.

Installing the air baffle

▶ To install the air baffle:

1 Place the air baffle into the chassis between the power supply and the hot-swap drive backplane, routing the cables as noted in the removal process.

2 Fit the tab that extends from the front of the baffle under the drive bay area.

3 Line up the guide pins on the baffle with the matching holes in the chassis and in the backplane.

4 Push down firmly on the air baffle to secure it to the chassis.
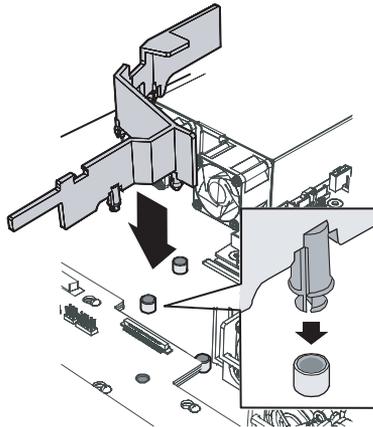
5 Follow the instructions in "Closing the server case" on page 39.

⏹

Installing and removing drives

Your server's basic configuration includes one CD or DVD drive and as many as three SATA fixed hard drives. SATA hot-swap hard drives and a hot-swap backplane are optional. A USB diskette drive is also included (but not installed in the server).

As you prepare to install drives, remember:

■ You must install a diskette drive in the left converted hard drive bay.

■ Before you install a drive, see the drive's documentation for information on configuring the drive, setting drive jumpers, and attaching cables.

■ You may need to configure the drives you install using the BIOS Setup utility. Press **F2** at startup to open the BIOS Setup utility.

Installing a diskette in a converted hard drive bay

If you need to install a diskette drive into your server, you must install the diskette drive in one of the hard drive bays.

Important	An internal diskette drive can only be installed in a converted hard drive bay if the optional hot-swap backplane is installed in your server.

▶ To install a diskette drive in a converted hard drive bay:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

Caution	The diskette drive is not hot-swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Remove the left hot-swap hard drive carrier from the server.

5 Remove the rails from the diskette drive conversion kit carrier by removing the four screws that secure the rails to the carrier.
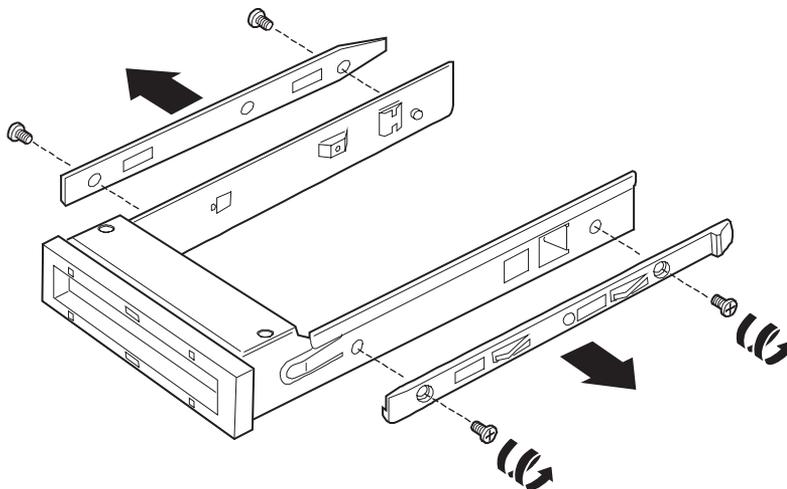
6 Slide the diskette drive into the drive carrier. The back of the drive should go into the carrier first with the bottom of the drive facing down.
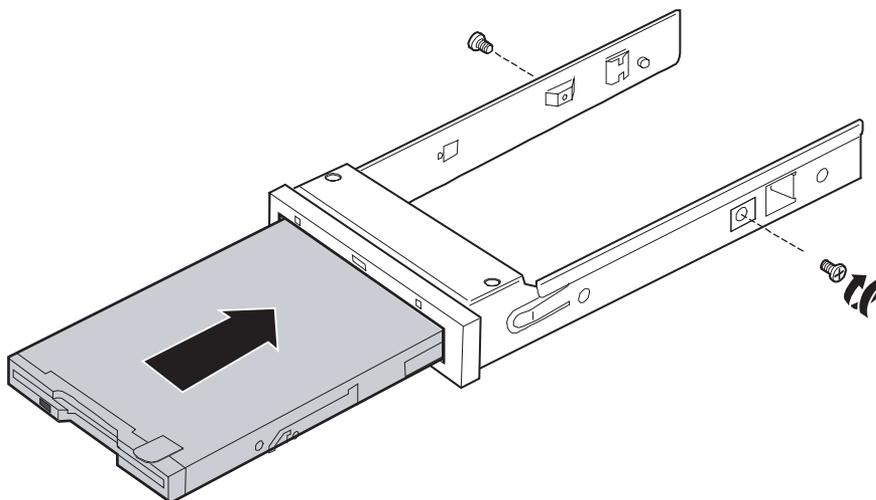
7 Align the holes in the sides of the diskette drive with the holes in the carrier and attach the drive to the carrier with the two screws that came with the diskette drive conversion kit.

8 Reattach the rails to the sides of the carrier with the four screws you previously removed.
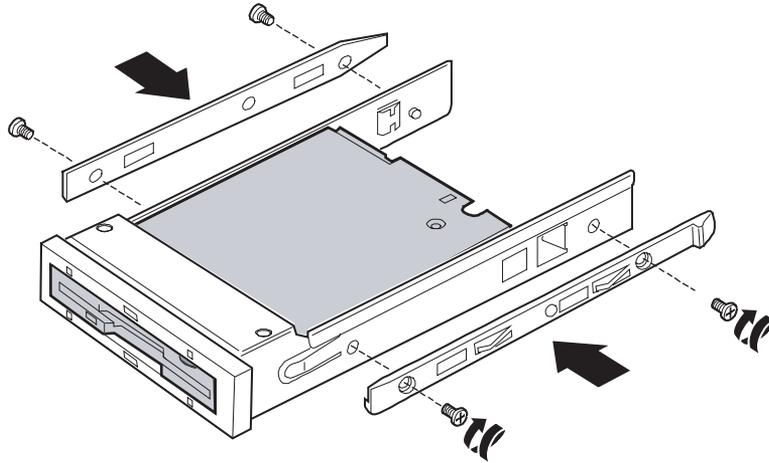
9 Open the connector on the back of the diskette drive by pulling up on the connector cover.
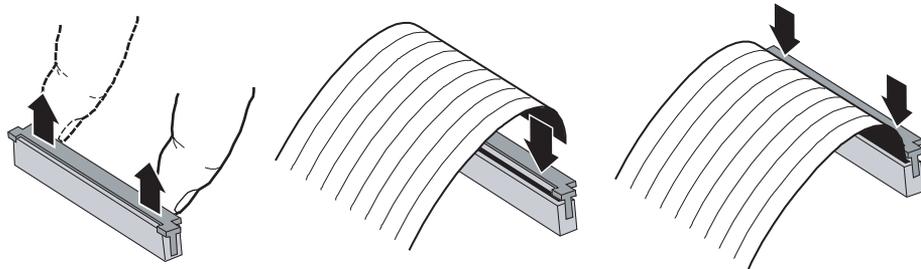
10 Insert one end of the 26-pin diskette drive flat flex cable into the connector, then push down on the connector cover to lock it into place.

11 Insert the new drive assembly into the hard drive bay until it clicks into place.

12 Open the connector labeled **Floppy Con** on the backplane by pulling up on the connector cover.
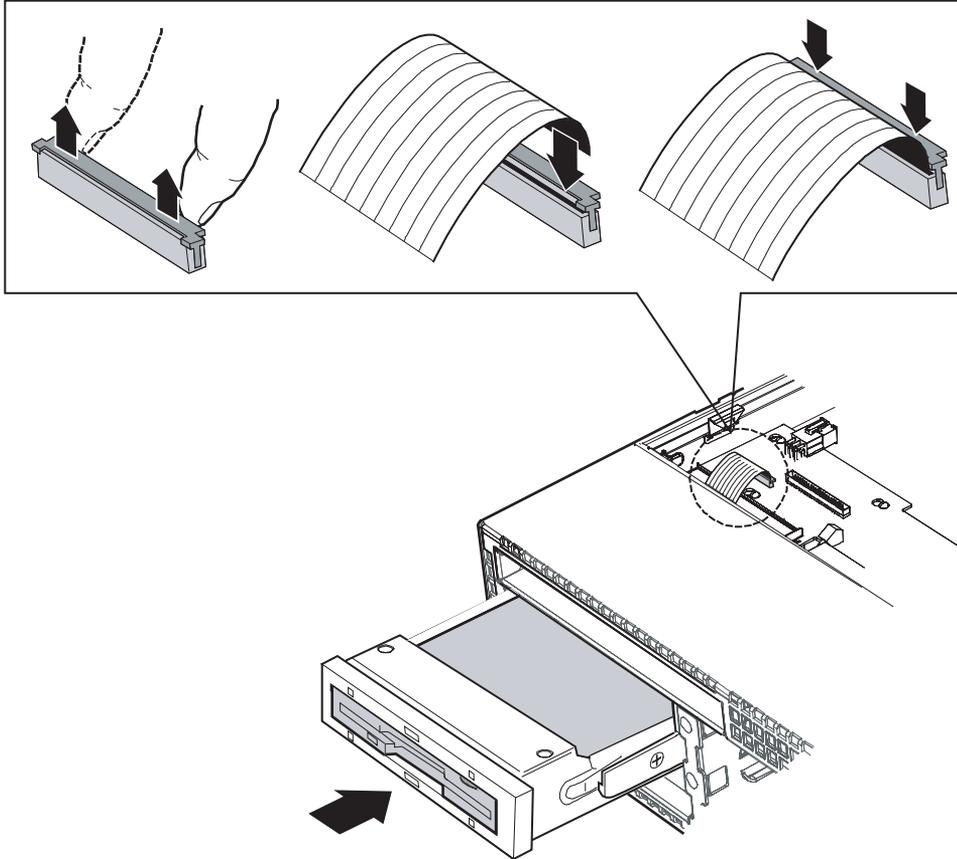
13 Insert the other end of the diskette flat flex cable into the backplane connector, then push in on the connector cover to lock the cable into place.

14 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

15 Follow the instructions in "Closing the server case" on page 39.

16 Reconnect all power cords and peripheral device cables, then turn on the server.

Removing a diskette drive from the converted hard drive bay

▶ **To remove a diskette drive from the converted drive bay:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

> **Caution**
>
> ⚠️
>
> The diskette drive is not hot-swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Pull up on the top of the connector on the backplane marked "Floppy Con" to release the flat flex cable.

5 Push in on the lever at the back of the drive carrier to release the drive carrier from the drive bay, then slide the diskette drive carrier out through the front of the server.

6 Pull up on the top of the connector on the back of the diskette drive and remove the flat flex cable.

7 Remove the four screws securing the rails to the carrier, then remove the rails.

8 Remove the two screws securing the diskette drive in the carrier, then slide the drive out of the carrier.

9 Follow the instructions in "Installing a diskette in a converted hard drive bay" on page 45 if you are installing a new diskette drive.

- OR -

Follow the instructions in "Installing or replacing a hard drive" on page 53 to install a hard drive.

10 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

11 Follow the instructions in "Closing the server case" on page 39.

12 Reconnect all power cords and peripheral device cables, then turn on the server.

⏹️

Installing a CD or DVD drive

▶ **To install a CD or DVD drive:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

> **Caution**
>
> ⚠️
>
> The CD or DVD drive is not hot-swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Remove the slim-line drive bay filler panel.

- OR -

Remove the CD/DVD drive carrier by pressing the blue lever at the back of the carrier and pushing the carrier out the front of the server.

5 Place the CD or DVD drive in the drive carrier (included with your server) by aligning the two holes in the left side of the drive with the two alignment pins in the carrier, then lowering the right side of the drive into the carrier until it clicks into place.

Interposer board

Screws

CD or DVD drive

Drive carrier
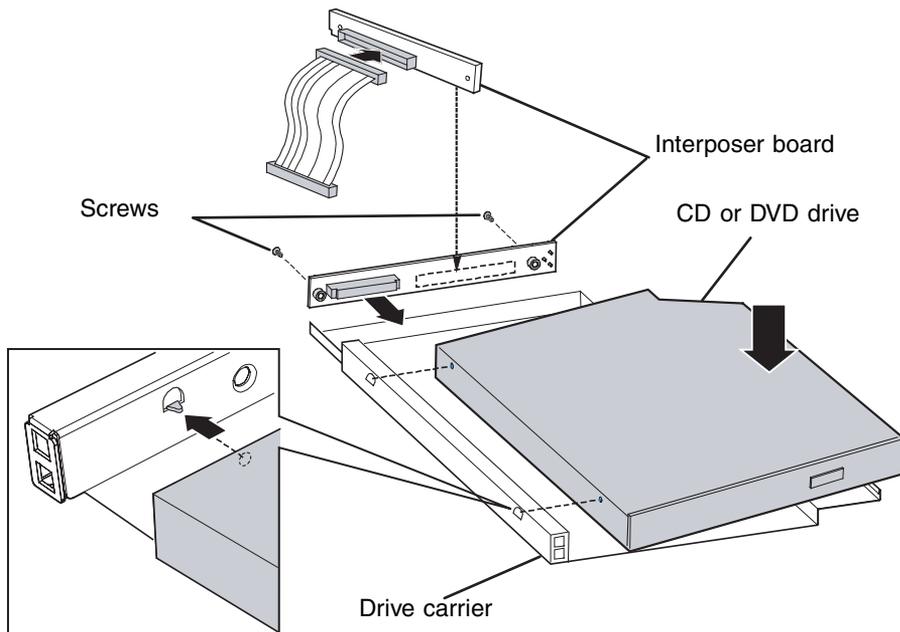
6 Align the connector on the interposer board with the connector on the back of the CD or DVD drive, then attach the board to the drive with two screws (included with your server).

7 Attach the 44-pin CD drive cable to the back of the interposer board.

8 Slide the CD or DVD drive assembly into the slim-line bay until it clicks into place.
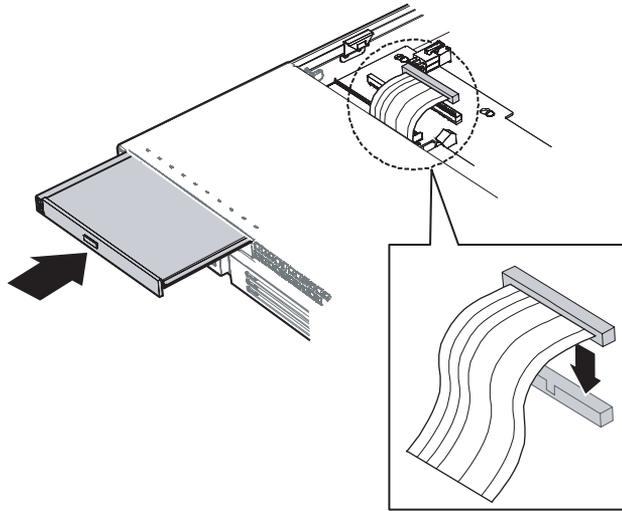
9 Connect the other end of the 44-pin cable into the connector on the backplane or the system board.

10 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

11 Follow the instructions in "Closing the server case" on page 39.

12 Reconnect all power cords and peripheral device cables, then turn on the server.

Removing a CD or DVD drive

▶ **To removing a CD or DVD drive:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

Caution ⚠	The CD or DVD drive is not hot-swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Disconnect the 44-pin CD drive cable from the backplane.

5 Push in on the blue lever at the back of the drive carrier to release the drive carrier from the drive bay, then slide the drive carrier out through the front of the server.

6 Press down on the side of the drive carrier to release the drive from the carrier.

7 Disconnect the 44-pin CD drive cable from the back of the interposer board.

8 Remove the four screws securing the rails to the carrier, then remove the rails.

9 Remove the two screws securing the interposer board to the back of the CD or DVD drive, then remove the interposer board.

10 Follow the instructions in "Installing a CD or DVD drive" on page 50 if you are installing a new CD or DVD drive.

- OR -

Install a slim-line drive bay filler panel into the empty bay.

11 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

12 Follow the instructions in "Closing the server case" on page 39.

13 Reconnect all power cords and peripheral device cables, then turn on the server.

■

Installing or replacing a hard drive

Use this procedure to add or replace hard drives in a drive bay. Your server supports as many as three 1-inch high 3.5-inch (fixed or hot-swap) SATA hard drives. You can purchase additional drives through your Gateway Sales representative.

Important	Gateway tests and verifies the operation and compatibility of the drives it sells. Especially in a hot-swap or mission-critical environment, additional or replacement drives must conform to Gateway standards.

Installing a fixed SATA hard drive

Use these instructions only if you have installed the fixed drive kit.

Caution	Fixed drives are not hot swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

To install a fixed SATA hard drive:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Press the latch on the back of the fixed drive carrier and slide it out of the bay. Store the drive in an anti-static bag.

Drive latch
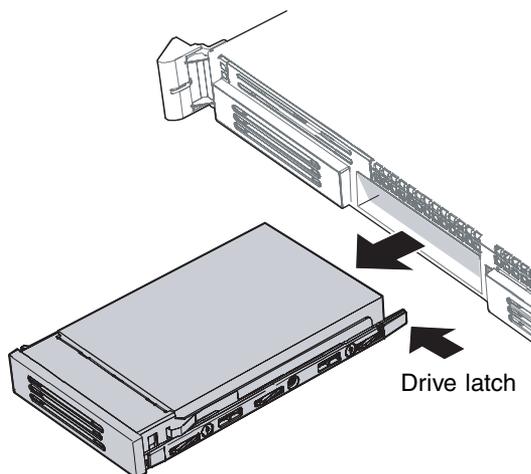
5 Remove the four screws that attach the plastic retention device or the previously installed hard drive to the drive carrier. Two screws are at each side of the retention device or the hard drive. Store the plastic retention device for future use.
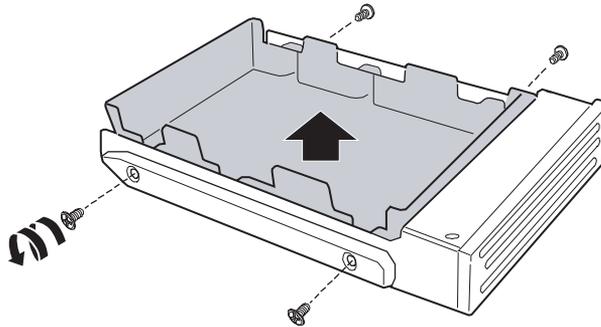
6 With the drive circuit-side down, position the connector end of the drive so that it is facing the back of the carrier.

7 Attach the hard drive to the carrier using the four screws removed from the carrier.
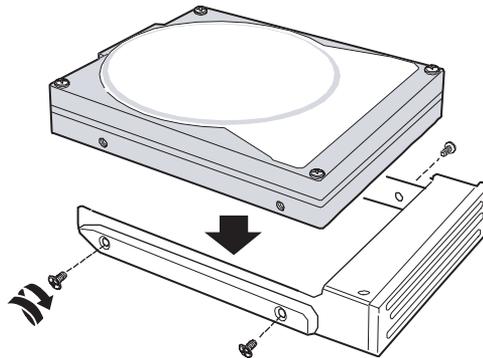
8 Insert the drive into the bay until it clicks into place.

9 If it is not already installed, connect the SATA power cable adapter (supplied with the fixed drive kit) to the 3x2 power supply cable from your power supply.
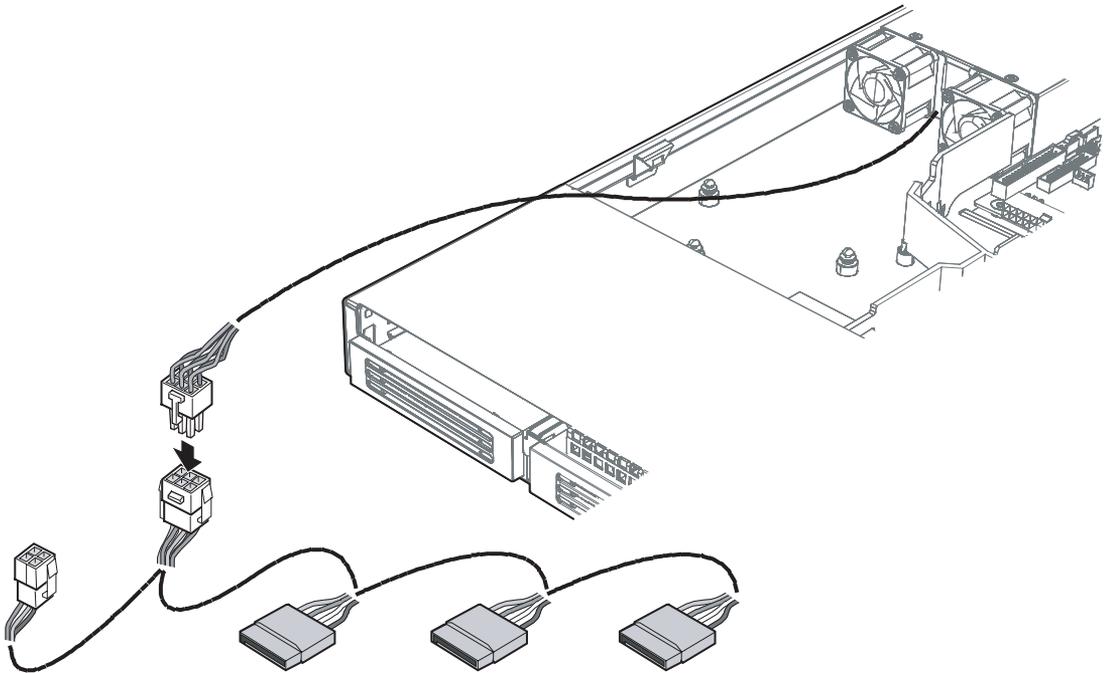
10 For each drive you install, route one SATA data cable from the server board or add-in card to the hard drive, with the right-angle end of the SATA data cable connected to the server board or add-in card SATA connector.

See your server board documentation or add-in card documentation for assistance in locating the SATA connectors on the board or add-in card.

Important	Data cables for drives installed to the right of the air baffle must be routed through the two cutouts in the top of the air baffle and under the tab. The data cable for a drive installed to the left of the air baffle must be routed through the back cutout of the air baffle and under the tab. You may need to remove the air baffle to route the cables underneath it. To see how to remove and then install the air baffle, see "Removing the air baffle" on page 42 and "Installing the air baffle" on page 44.

11 Connect the loose end of the data cable to the rear of the SATA drive.

Air baffle tab

Air baffle back cutout

Air baffle cutout

Air baffle

Air baffle

Air baffle cutout
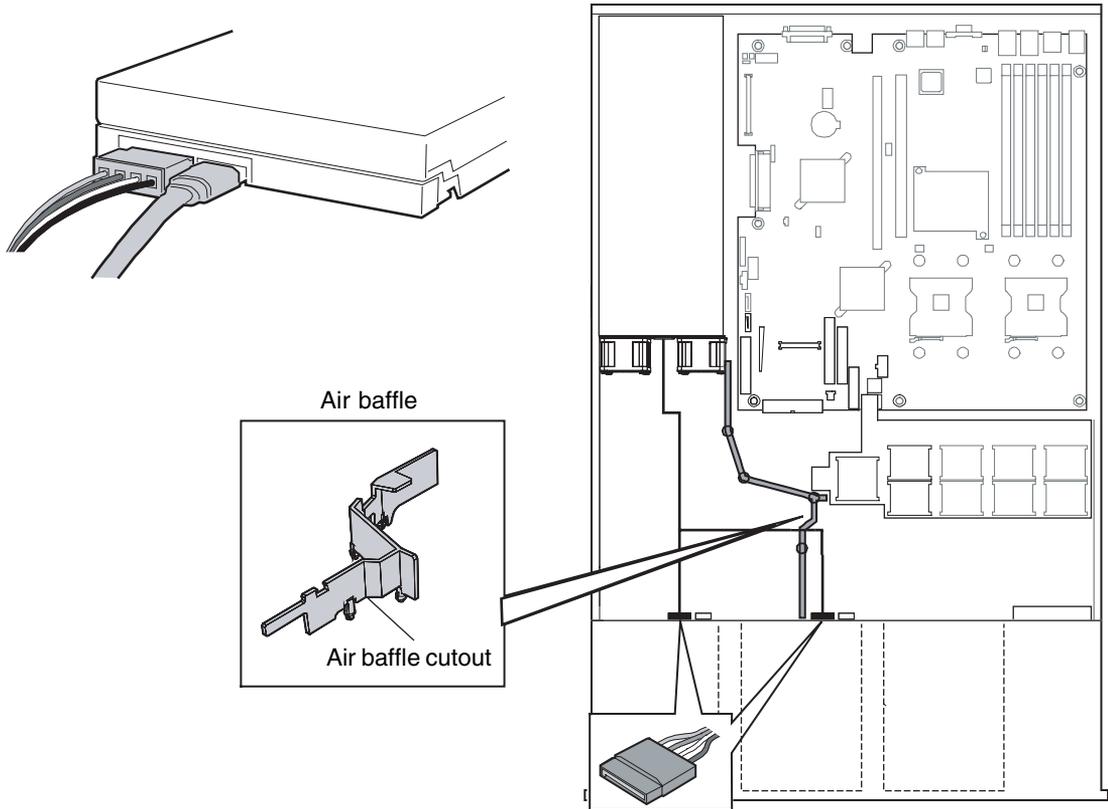
12 Connect the SATA power cable adapter end(s) to the rear of the SATA drive.

13 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

14 Follow the instructions in "Closing the server case" on page 39.

15 Reconnect all power cords and peripheral device cables, then turn on the server.

Removing a fixed SATA hard drive

Use these instructions only if you have installed the fixed drive kit.

Caution	Fixed drives are not hot swappable. Before installing or removing the drive, make sure that power is turned off and the power cord is unplugged.

To remove a fixed SATA hard drive:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

4 Disconnect the SATA data connector and power cables from the rear of the SATA drive.

5 Press the latch on the back of the fixed drive carrier and slide it out of the bay.

6 Remove the four screws that attach the hard drive to the drive carrier. Lift the drive from the carrier. Store the drive in an anti-static bag.

7 If you are not installing a new drive, place the plastic retention device into the drive carrier, using the four screws you removed from the hard drive.

8 Insert the screws that held the drive in the carrier into the screw locations on the carrier for future use.

9 Slide the drive carrier back into the chassis until it clicks into place.

Important	For correct airflow, the hard drive carrier must be replaced in the chassis, even if no hard drive is installed in it.

10 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

11 Follow the instructions in "Closing the server case" on page 39.

12 Reconnect all power cords and peripheral device cables, then turn on the server.

Installing a hot-swap hard drive

To install a hot-swap hard drive:

1 Unlock the bezel (if necessary) and remove it by pulling it from the chassis.

Caution

Before you remove a failed drive, use the appropriate software and utilities installed on the server to stop all activity on the failed drive. Instructions for using the software are provided by the software manufacturer. Failure to do so may destroy the data on the drive.

2 Press the green release button on the hot-swap tray lever, then swing the lever open all the way.
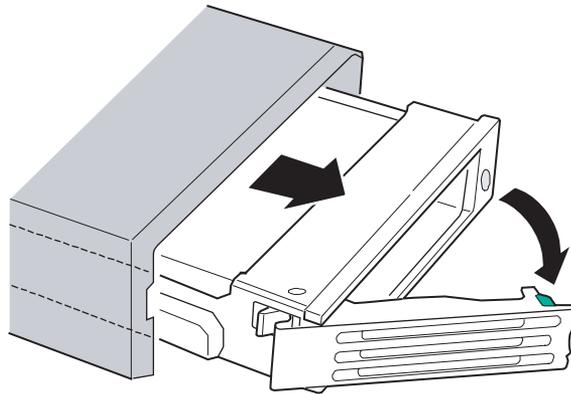
3 Pull the drive carrier straight out of the server.

4 If you are replacing a hard drive, remove the four screws that secure the old hard drive to the drive tray, then remove the drive from the tray.

- OR -

If you are adding a new drive, remove the four screws that secure the hard drive spacer to the drive tray, then remove the spacer from the tray.
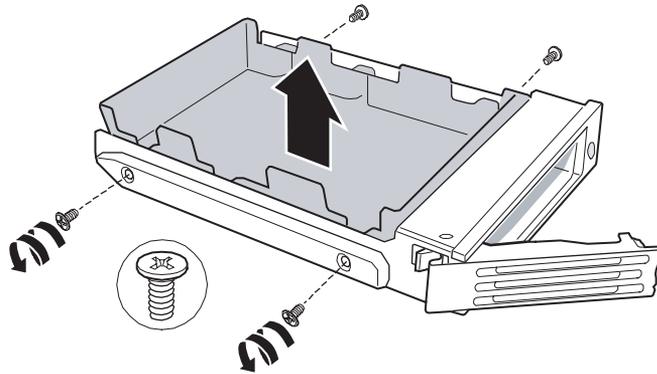
5 Line up the screw holes in the new drive with the holes in the side of the drive tray, then secure the drive to the tray with the four screws you removed in Step 4.
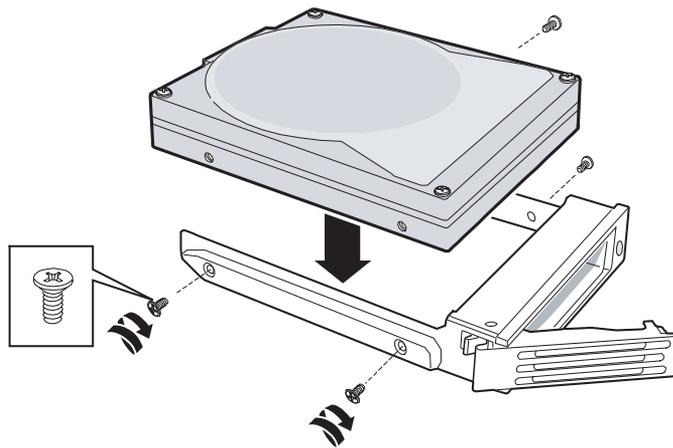
6 Make sure that the tray's release lever is open, then slide the new drive into the empty hot-swap bay.

7 When the drive carrier lever begins to close by itself, push on the lever to lock the drive assembly into the drive bay.

8 Reinstall the bezel, if required, by snapping it into place on the front of the chassis.

Configuring your onboard RAID solution

Your server comes equipped with an onboard, chipset SATA RAID solution, which supports RAID levels 0 (striping) and 1 (mirroring). The onboard RAID solution can be enabled in the BIOS (page 133) and configured by launching the RAID BIOS console during the boot process.

Configuring the onboard SATA RAID solution

Level	Description and use	Pros	Cons	Number of drives	Fault Tolerant
0	Data divided into blocks and distributed sequentially (pure striping). Use for non-critical data that requires high performance	High data throughput for large files	No fault tolerance. Data is lost if a drive fails.	One or two	No
1	Data duplicated on another disk (mirroring). Use for read-intensive, fault-tolerant systems.	100 percent data redundancy, providing fault tolerance.	More disk space required. Reduces usable disk space to the size of the smallest drive. Reduced performance during rebuilds.	Two	Yes

▶ To launch the SATA RAID BIOS console:

1 Restart your server.

2 Press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

3 From the **Main** BIOS menu, select the **Advanced** menu.

4 Select the **IDE Configuration** sub-menu.

5 For the **Configure S-ATA as RAID** option, select **Enabled**.

6 Exit the BIOS Setup utility.

7 Restart your server.

8 During the boot process you will see the following message:

Press <Ctrl>-<E> for BIOS Console

9 Press and hold the C**TRL** key, then press the **E** key. The RAID BIOS console will open.

> **Important**
>
> When you press C**TRL** + **E** to configure the SATA RAID, you will see the following error message: **Error (0146): Insufficient Memory to Shadow PCI ROM**. This error message can be ignored.

10 Configure the RAID options, then exit the RAID BIOS console.

11 Reboot the server.

⬤

▶ **To configure the SATA RAID solution:**

1 Open the BIOS Setup utility as described in the previous procedure.

```
Embedded RAID Configuration Utility   Ver 5.14 May 19, 2004

                    ┌──── Configuration Menu ────┐
                    │ Easy Configuration         │
     ┌─ Management  │ New Configuration          │
     │ Configure    │ View/Add Configuration     │
     │ Initialize   │ Clear Configuration        │
     │ Objects      │ Select Boot Drive          │
     │ Rebuild      └────────────────────────────┘
     │ Check Consistency │
     └───────────────────┘




     ┌──────────────────────────────────────────────────────────────┐
     │ Defines Physical Arrays, An Array Will Automatically Become A logical drive │
     └──────────────────────────────────────────────────────────────┘
Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option
```

2 Select **Configure** from the **Management** menu, then select **Easy Configuration**.

3 Press the S**PACEBAR** to associate the selected physical drives with the current array. The indicator changes from **READY** to **ONLINE**.

4 Press **Enter** when you finish creating the current array, then press **F10** to select configurable arrays.

5 Press the **SPACEBAR** to select the array. The *Logical Drive Configuration* screen opens.

```
       Embedded RAID Configuration Utility    Ver 5.14 May 19, 2004
                        ─ Logical Drive(s) Configured ─
       LD    RAID     Size    #Stripes    StripeSz    Status

       0      1      77180MB      2        64  KB     ONLINE
  ─ Managem
  Configure
  Initializ
  Objects
  Rebuild
  Check Con

                  ─Logical Drive 0─
                  RAID = 0
                  Size = 154360MB
                  Stripe Size
                  Accept
                  SPAN = NO


                    Set Size Of This Logical Drive

  Use Cursor Keys To Navigate Between Items And Press Enter To Select An Option
```

6 Select the physical drives to associate with the current array, then press the **SPACEBAR**.

7 Set the RAID level for the logical drive by highlighting RAID and pressing **ENTER**. The available RAID levels for the current logical drive are shown.

8 Select a RAID level, then press **ENTER**.

9 Set the RAID logical drive size and stripe size.

10 When you have defined the current logical drive, select **Accept**, then press **ENTER**.

11 Repeat Step 7 through Step 10 to configure additional logical drives.

12 Save the configuration when prompted, then press **ENTER** to return to the **Management** menu.

Caution	Initializing the RAID array destroys any data on the hard drives in the selected array.

13 Select **Initialize** from the **Management** menu.

14 Use the **SPACEBAR** to highlight the logical drive to initialize, then press **F10**.

15 Select **Yes** at the prompt, then press **ENTER** to begin initialization. A graph will show the progress of the initialization process.

16 When the initialization process is complete, press **ESC** to return to the previous menu.

17 Exit the RAID Configuration utility and reboot the server.

Filling empty drive bays

Empty drive bays in the server must be filled by filler panels, empty drive carriers, or empty drive trays, as appropriate. With the bezel removed, install the appropriate carrier or filler panel, then replace the bezel by snapping it into place on the front of the server.

Installing memory

Your server supports from 256 MB to 12 GB* of total DDR333 or DDR266 memory. Supported DIMM sizes include 256 MB, 512 MB, 1 GB, and 2 GB.

| **Caution**	Modules must be installed in banks in identical pairs. Use only DDR266 or DDR333 compliant, 184-pin, SDRAM registered x72 ECC, LP (low profile) DIMM memory modules.
	Install memory first into Bank 1, then Bank 2, then Bank 3. If memory is installed incorrectly, your server will not start.

The BIOS configures the memory controller to run in either single channel or dual channel mode, depending on the following:

■   If one or more fully populated DIMM banks are detected, the memory controller will run in dual channel mode.

DIMM banks must be populated using the following guidelines:

■   DIMM banks must be populated in order, starting with Bank 1.

■   Single rank DIMMs must be populated before dual rank DIMMs.

■   When using DDR333 DIMMs, a maximum of four DIMMs can be populated when all four DIMMs are dual rank (double row) DIMMs.

■   DDR266 and DDR333 memory can be mixed on the server board, but when mixing DIMM types, DDR333 memory will be treated as DDR266
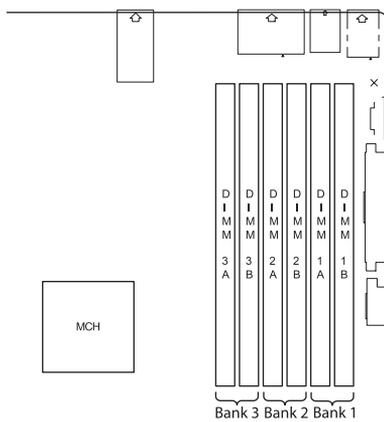
* When using Dual Rank (double row) DIMMs, a maximum of four loads per memory channel is supported, therefore a maximum of four dual rank DIMMs can be populated on this system board.

Supported DDR266 DIMM populations		
Bank 3 - DIMMs 3A and 3B	**Bank 2 - DIMMs 2A and 2B**	**Bank 1 - DIMMs 1A and 1B**
Single row	Single row	Single row
Empty	Single row	Single row
Empty	Empty	Single row
Double row	Double row	Double row
Empty	Double row	Double row
Empty	Empty	Double row
Double row	Single row	Single row
Double row	Double row	Single row
Empty	Double row	Single row

Supported DDR333 DIMM populations		
Bank 3 - DIMMs 3A and 3B	**Bank 2 - DIMMs 2A and 2B**	**Bank 1 - DIMMs 1A and 1B**
Single row	Single row	Single row
Empty	Single row	Single row
Empty	Empty	Single row
Empty	Double row	Double row
Empty	Empty	Double row
Double row	Single row	Single row
Empty	Double row	Single row

Memory online sparing

The chipset on the system board in the Gateway 9315 supports memory online sparing, which can provide a way to prevent data loss in case of DIMM failure. Memory online sparing is configured in the BIOS.

Using memory online sparing, one DIMM per channel (selectable in the BIOS setup utility) is used as a memory spare (the spare DIMM must be equal to, or larger than, the largest DIMM in that channel). If a DIMM begins to fail, the contents of the failing DIMM is copied to the spare DIMM in that channel. When all of the data is copied, the primary DIMM is automatically removed from service. Since one DIMM per channel is always

maintained as a spare, only 75% of the installed memory is usable. For example, if six 2 GB DIMMs are installed, only four are actively used (the other two are used as spares), so the maximum usable memory for this configuration would be 8 GB.

A DIMM fault LED adjacent to the DIMM slot will light orange to indicate the failed memory module.

▶ To install or replace memory:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Pull the plastic tabs away from the sides of the memory module slot. If you are replacing a memory module, lift the old module out of the slot.
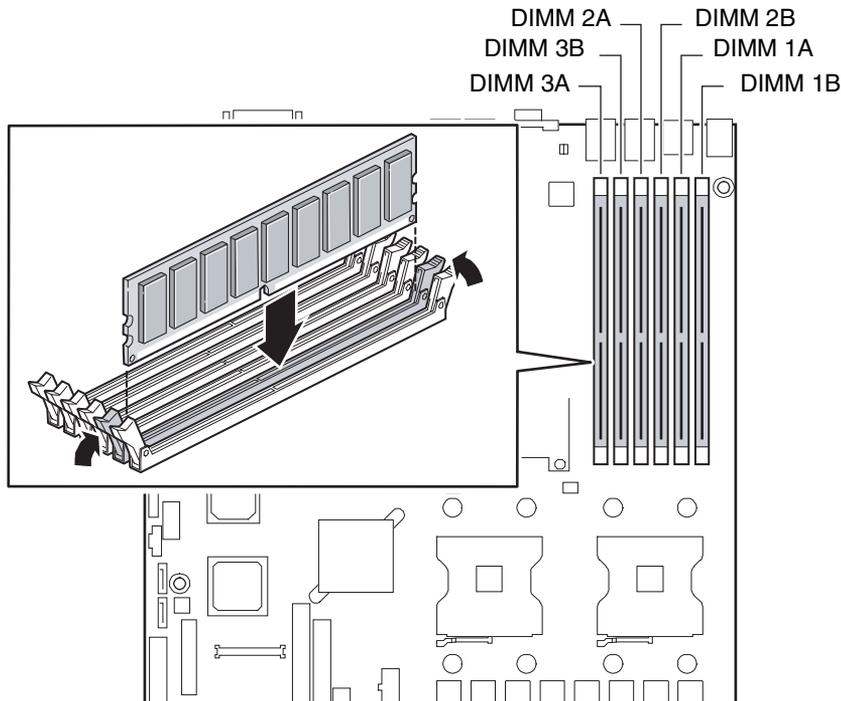
4 Align the notch on the new module with the notch in the memory module slot and press the module firmly into the slot. The tabs on the sides of the memory slot should secure the memory module automatically.

5 Follow the instructions in "Closing the server case" on page 39.

6 Turn on the server, then make sure that the operating system completely loads. If you receive an error, see "Memory" on page 120.

7 Follow the instructions in "Updating the FRU/SDR" on page 32.

# Removing and Installing PCI expansion cards

Caution

The PCI riser assembly and individual PCI expansion cards are not hot-swappable. Before installing or removing the any part of the assembly, make sure that power is turned off and the power cord is unplugged.

Removing and installing the PCI riser assembly

▶ **To remove and install the PCI riser assembly:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 If necessary, disconnect any cables that are attached to installed PCI expansion cards.

4 Lift the PCI riser assembly from the system board by lifting the two, blue latches on the assembly.
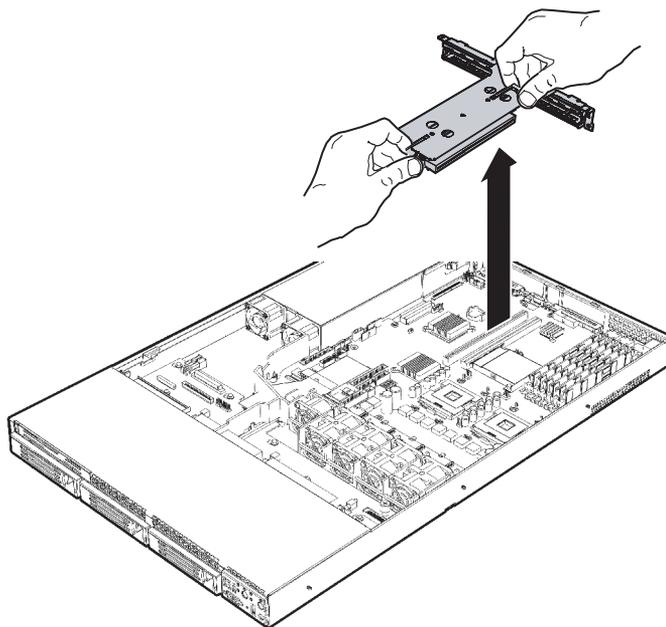
5 If you are installing or replacing a PCI expansion card, follow the instructions in "Removing and installing a PCI expansion card" on page 71.

| Caution | Do not touch the contacts on the bottom part of the expansion card. Touching the contacts can cause electrostatic damage to the card. |

- OR -

If you are installing or replacing the PCI riser connector, follow the instructions in "Removing and installing a PCI riser connector" on page 72.

6 Position the PCI riser assembly over the PCI sockets on the server board, lining up the four hooks at the back of the riser assembly with the four slots in the back of the chassis.
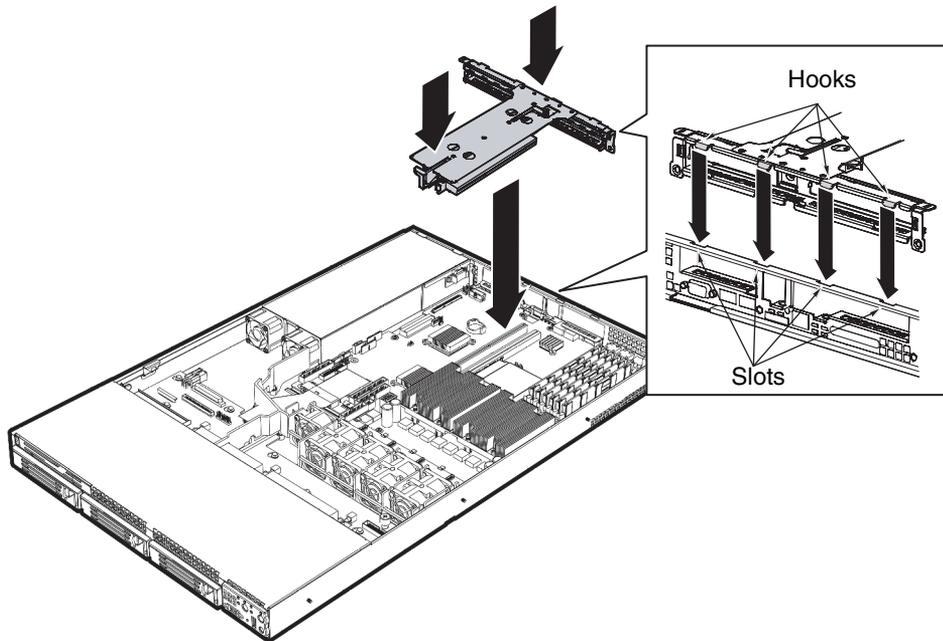
7 Press the PCI riser assembly back into the server.

8 Follow the instructions in "Closing the server case" on page 39.

9 See the card's documentation for software installation instructions.

Removing and installing a PCI expansion card

▶ **To remove and install a PCI expansion card:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 If you are replacing a card, disconnect any cables that are attached to the old card.

4 Lift the PCI riser assembly from the system board by lifting the two, blue latches on the assembly.

5 If you are replacing a card, remove the old expansion card. You can slightly rock the card end-to-end to loosen and remove the card (do not bend the card sideways), then proceed to Step 6.

| **Caution** ⚠ | Do not touch the contacts on the bottom part of the expansion card. Touching the contacts can cause electrostatic damage to the card. |

- OR -

If you need to change out the PCI riser connector, follow the instructions in "Removing and installing a PCI riser connector" on page 72.

6 Insert the new PCI card into the card slot. You can slightly rock the card end-to-end to help insert the card, but do not bend the card sideways.
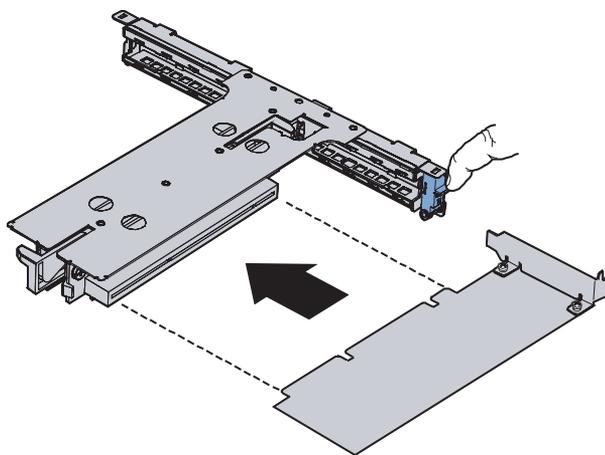
7 Connect any cables to the card following the instructions in the card's documentation.

8 Install the PCI riser assembly back into the server by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

9 Follow the instructions in "Closing the server case" on page 39.

10 See the card's documentation for software installation instructions.

⬛

Removing and installing a PCI riser connector

You received your server chassis with your choice of one of two PCI riser connectors:

■ A full-height PCI-Express riser with one PCI-Express x8 slot

■ A full-height PCI-X riser with one PCI-X slot

The PCI riser connector can be replaced if it fails or if a different option is required.

▶ **To remove and install a PCI riser connector:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Remove the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

4 Remove any expansion cards installed in the PCI riser connector. You can slightly rock the card end-to-end to loosen and remove the card (do not bend the card sideways).

Caution ⚠️	Do not touch the contacts on the bottom part of the expansion card. Touching the contacts can cause electrostatic damage to the card.

5 Push back on the blue release lever at the end of the PCI riser connector. While holding the lever back, push firmly on the other edge of the board to disengage the board from the riser.

PCI riser connector

Riser retention pin

Riser locking lever
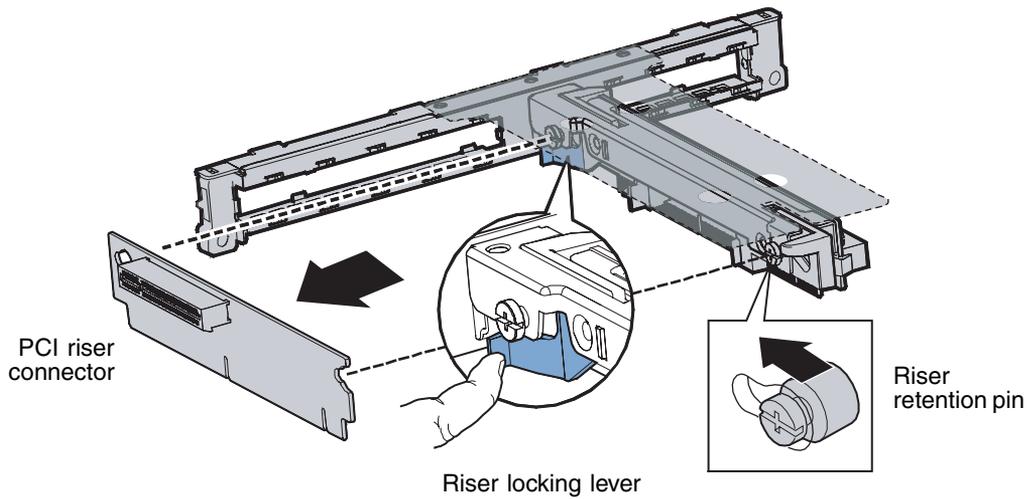
6 Place the PCI riser connector in a static-free bag for future use.

7 Line up the screws on the riser assembly with the slot and the large hole on the new PCI riser connector.
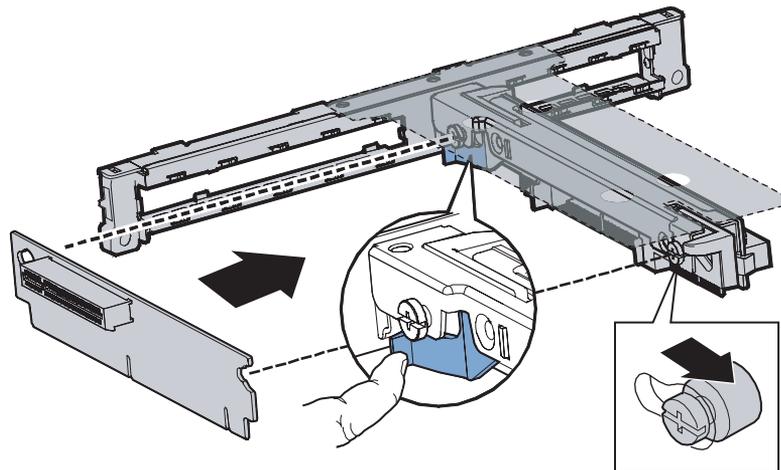
8 Press and hold the blue riser locking lever, then place the PCI riser connector onto the retention pins.

9 Slide the PCI riser connector to the right to lock it into place, then release the blue locking lever.

10 Install PCI expansion cards by following the instructions in "Removing and installing a PCI expansion card" on page 71.

11 Install the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

12 Follow the instructions in "Closing the server case" on page 39.

Replacing a system fan

Caution

The system fans are not hot-swappable. Before installing or removing a system fan, make sure that power is turned off and the power cord is unplugged.

To replace the fan module:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Follow the instructions in "Removing the processor air duct" on page 41.

4 Trace the cable from the failed fan to the fan distribution board, then disconnect the cable from the board.

5 Lift the failed fan from the fan distribution board and remove it from the server.

Important

Note the orientation of the failed fan before you remove it.

There are two raised arrows on the replacement fan. One arrow should point to the left and the other arrow should point to the back of the server.

6 Make sure that the arrows are oriented correctly, then insert the replacement fan into the fan module.

7 Connect the fan power cable to the fan distribution board.

8 Follow the instructions in "Installing the processor air duct" on page 42.

9 Follow the instructions in "Closing the server case" on page 39.

Installing a processor

The 9315 server is compatible with Intel® Xeon processors with a front side bus frequency of 800 MHz and a minimum speed of 2.8 GHz. The server automatically detects the processors each time you turn it on. Whenever you install new processors, you should first install the most current version of the BIOS. For instructions, see "Updating the BIOS" on page 93.

Warning	Processors and heat sinks may be hot if the computer has been running. Before replacing a processor or heat sink, allow them to cool for several minutes.
Caution	A heat sink must be installed on the processor. Installing a processor without a heat sink could damage the processor.
Important	You must have a processor in the CPU 1 socket or your server will not start. If you are upgrading your server from one processor to two, you may need to reconfigure your operating system so it can recognize the additional processor. For more information, see your operating system's documentation.

▶ To install or replace a processor:

1 Install the most current BIOS version. For instructions, see "Updating the BIOS" on page 93.

2 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

3 Follow the instructions in "Opening the server case" on page 38.

4 Follow the instructions in "Removing the processor air duct" on page 41.

**5** If you are installing a processor, proceed to Step 7.

- OR -

If you are replacing a processor, loosen the four captive screws on the corners of the heat sink, then twist the heat sink slightly to break the seal between the heat sink and remove it from the processor.

| **Caution**	Do not force the heat sink from the processor. Doing so could damage the processor.
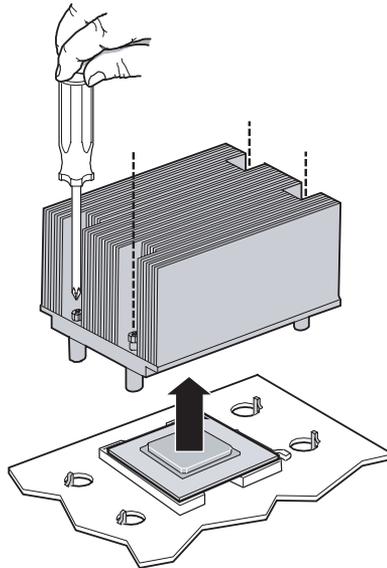
6 Rotate the processor release lever a full 135° to release the processor, then lift the processor out of the socket.
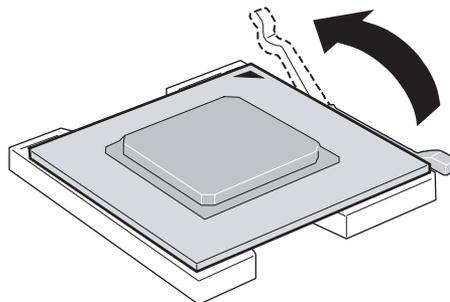
7 If you are installing a second processor for the first time, remove the air dam from the processor air duct.

<table>
<tr><td>**Caution**

⚠️</td><td>If you do not remove the air dam from the processor air duct, the second processor may overheat, resulting in loss of data and possible damage to your server.</td></tr>
</table>
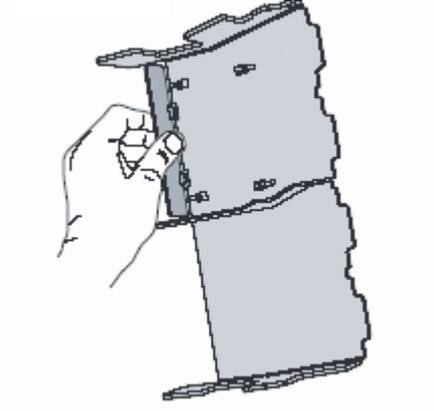
8 Before inserting the processor into the socket, make sure that:

- The processor release lever is open all the way (135° from the closed position)
- The triangular arrow on the corner of the processor aligns with the triangular icon on the corner of the CPU socket
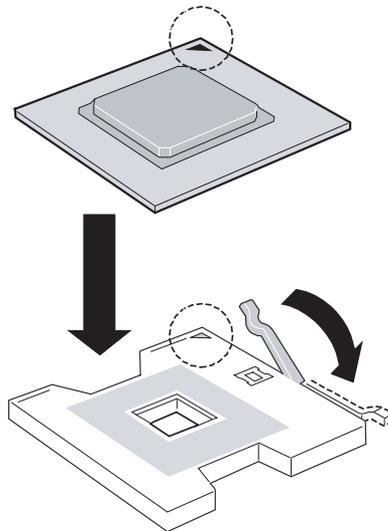
**9** Install the new processor into the CPU socket, then press the processor locking lever down until it lays flat against the CPU socket.

10 Place the heat sink over the processor, lining up the four captive screws with the four posts surrounding the processor.
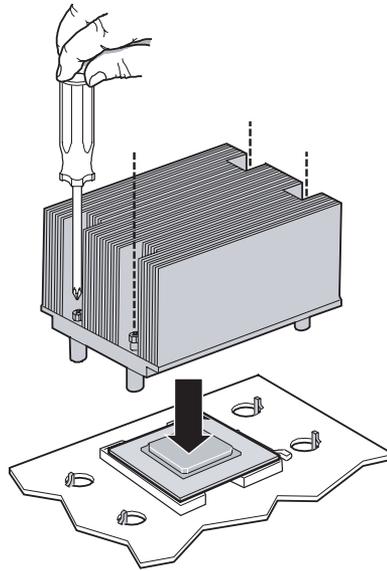
11 Loosely screw in the captive screws on the corners of the heat sink, gently tightening diagonal screws (screw in one screw, then the screw located diagonally to the first screw). Do not fully tighten one screw before tightening another.

12 Gradually and equally tighten each captive screw until each is firmly tightened. Do not over-tighten the screws.

13 Follow the instructions in "Installing the processor air duct" on page 42.

14 Follow the instructions in "Closing the server case" on page 39.

Replacing the power supply

▶ To replace the power supply:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 If you have a hot-swap backplane installed, follow the instructions in "Removing the air baffle" on page 42.

4 Disconnect the power signal cable, main power cable, and the CPU power cables from the system board.

5 Disconnect the flex cable and the 2×3 power cable from the backplane.

Flex cable

2×3 cable
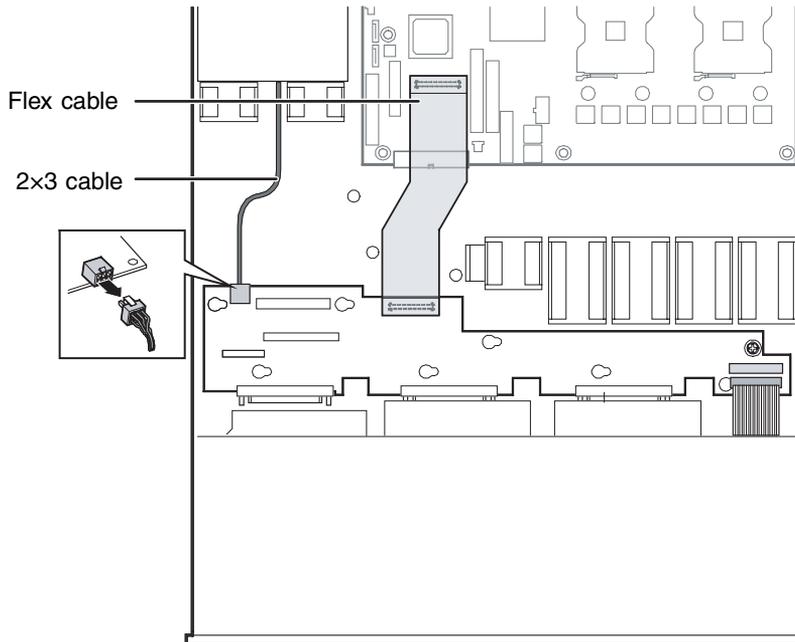
6 Lift the front edge of the power supply, then pull it toward the front of the server to disengage it from the retention clips at the back of the server.

7 Lift the power supply out of the case.

8 Place the replacement power supply into the chassis, then slide it towards the back of the server to engage it beneath the two retention clips at the back of the chassis.

9 Connect the power signal cable, the main power cable, and the CPU power cable to the system board.

10 Connect the flex cable and the 2×3 cable to the backplane.

11 If you have a hot-swap backplane installed, follow the instructions in "Installing the air baffle" on page 44.

12 Follow the instructions in "Closing the server case" on page 39.

Installing or replacing the hot-swap backplane

Your server may not have a hot-swap backplane. If your server was ordered with fixed drives, it will not have a hot-swap backplane.

▶ To install or replace the hot-swap backplane:

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Remove the bezel by unlocking it, then pulling it straight off the front of the chassis.

3 Follow the instructions in "Opening the server case" on page 38.

4 Follow the instructions in "Removing the air baffle" on page 42.

5 Remove all drives and drive carriers by following the instructions in "Installing or replacing a hard drive" on page 53. Make note of which bay you remove each drive from.

If you are installing a hot-swap backplane for the first time, go to Step 9. Otherwise go to the next step.

6 Disconnect all cables from the backplane.

7 Loosen the blue captive screw on the right side of the backplane, then slide the backplane to the right until it stops.
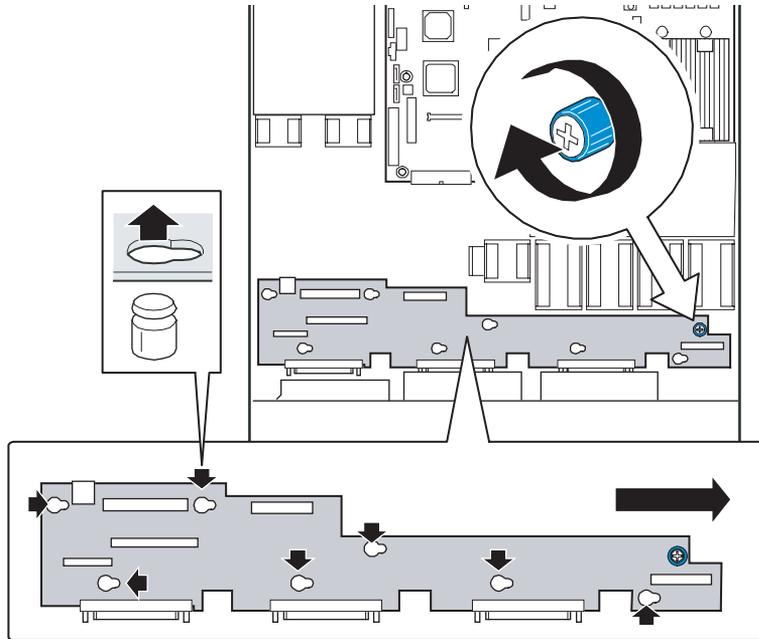
8 Lift the backplane from the server and place it in a static-free bag for future use.

Caution	Lift the backplane by the edges only. Damage may result if you pull on any board components.

9 Align the new backplane's keyhole slots with the mounting posts on the floor of the server case, then slide the backplane to the left until it stops.

10 Tighten the blue captive screw at the right side of the board to secure the backplane to the server.

11 Connect all cables to the backplane.

12 Follow the instructions in "Installing the air baffle" on page 44.

13 Follow the instructions in "Closing the server case" on page 39.

14 Install the drives back into the server. If you are replacing the backplane, make sure that you replace the drives in the same bays you removed them from in Step 5.

15 Reinstall the bezel (if required).

Replacing the CMOS battery

If the server clock does not keep time or the settings in the BIOS Setup utility are not saved when you turn off the server, replace the CMOS battery with an equivalent battery.

Warning

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of or recycle used batteries by taking them to a hazardous waste facility. Follow all local regulations for correct battery disposal.

▶ To replace the battery:

1 Print the appendix for BIOS Settings in this guide.

2 Open the BIOS Setup utility. For instructions, see "Opening the BIOS Setup utility" on page 92.

3 Record the BIOS settings on your printout, then close the utility.

4 Turn off your server, then follow the instructions in "Preventing static electricity discharge" on page 37.

5 Follow the instructions in "Opening the server case" on page 38.

6 Locate the old battery on the system board and note its orientation. You will need to install the new battery the same way.
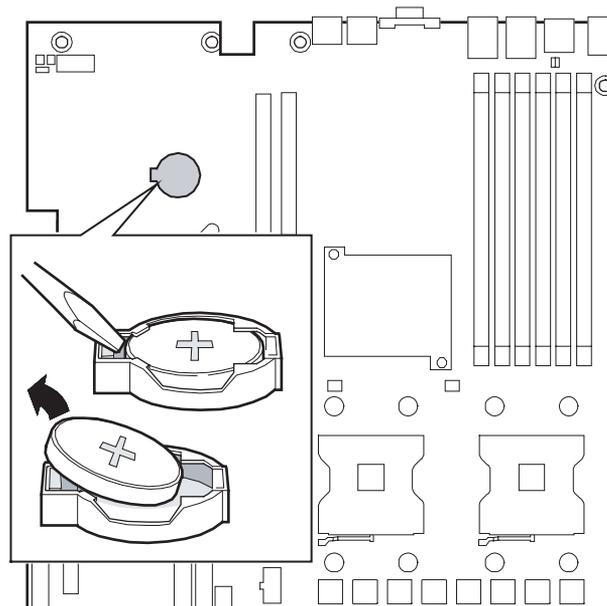
7 Push the battery retention clip away from the battery until the battery lifts up, then remove the old battery. You can use a screwdriver to help lift the battery.

8 Make sure that the positive (+) side of the new battery is facing up, then press the new battery into the socket until it snaps into place.

9 Follow the instructions in "Closing the server case" on page 39.

10 Turn on your server, then press **F2** when the Gateway logo screen appears during startup.

11 Restore any BIOS settings that you wrote down in Step 3.

12 Save all your settings and close the BIOS Setup utility.

Replacing the control panel

▶ **To replace the control panel:**

1   Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2   Unlock the bezel, then remove it by pulling it straight off the server.

3   Follow the instructions in "Opening the server case" on page 38.

4   Press the blue latch at the back of the control panel, then slide the control panel forward far enough to reach the front panel and USB cable connectors at the back of the panel.

Tips & Tricks

You may need to disconnect the ends of the front panel and USB cables from the system board or backplane to create enough slack in the cables to reach the connectors.
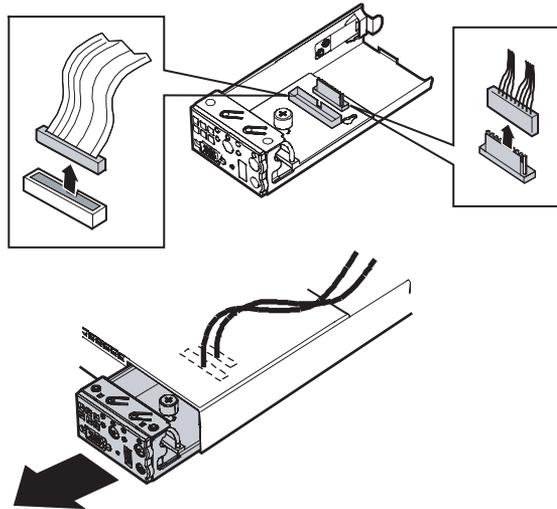
5   Disconnect the cables from the control panel.

6 Slide the replacement control panel into the server far enough to connect the front panel and USB cables. If you disconnected the cables from the system board or backplane, reconnect them.

7 Slide the control panel the rest of the way into the server, until it clicks into place.

8 Follow the instructions in "Closing the server case" on page 39.

9 Replace the bezel on the front of the server.

Replacing the system board

▶ **To replace the system board:**

1 Follow the instructions in "Preventing static electricity discharge" on page 37. Make sure that you turn off the server, then unplug the power cord and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Follow the instructions in "Removing the processor air duct" on page 41.

4 Remove the memory modules by following the instructions in "Installing memory" on page 65.

5 Remove the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

6 Remove the heat sinks and processors by following the instructions in "Installing a processor" on page 76.

7 Disconnect all cables from the system board, noting their locations and orientation. (You will reconnect the cables after you install the new board.)

8 Remove the 9 screws that secure the system board to the server.

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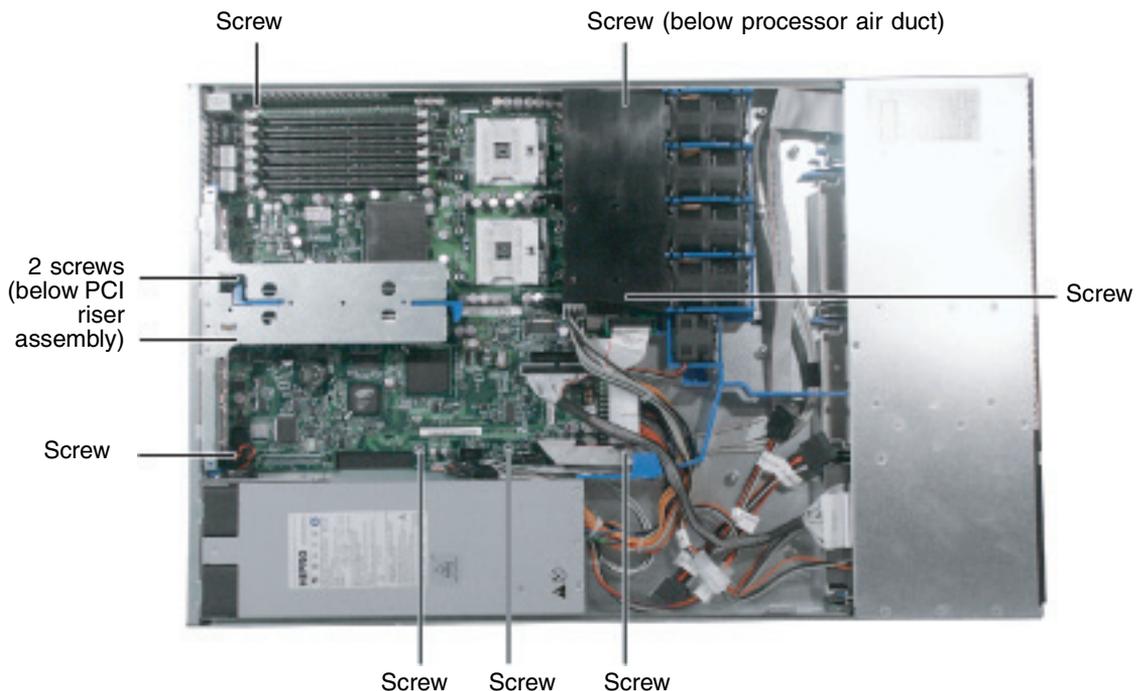
9 Slide the system board toward the front of the server. If the board is difficult to move, push on the back I/O port panel for added leverage.
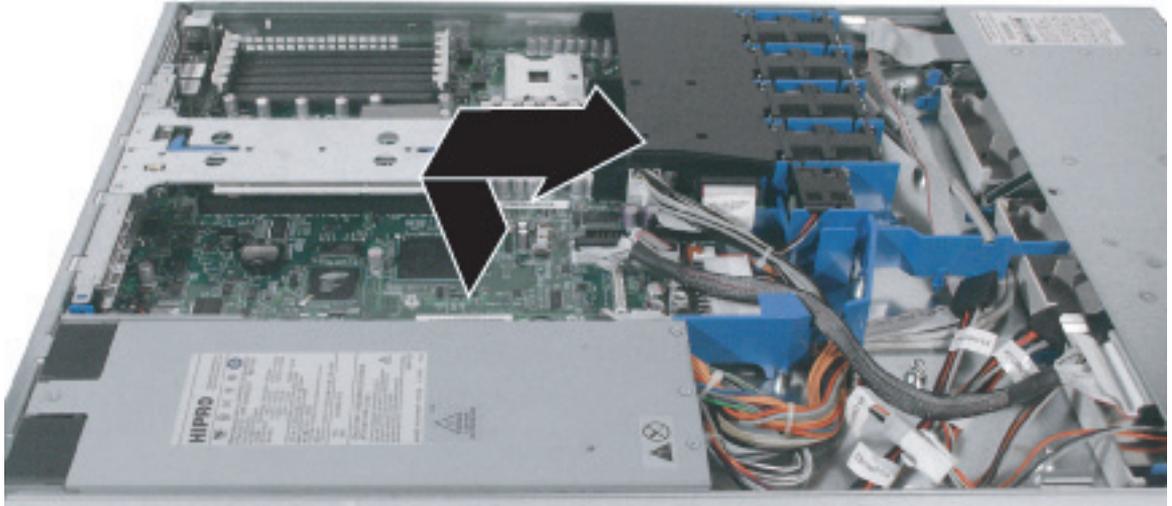
10 Lift the board away from the case.

11 Insert the new system board into the case, then slide the board toward the back of the case until the holes in the board line up with the threaded standoffs on the case.
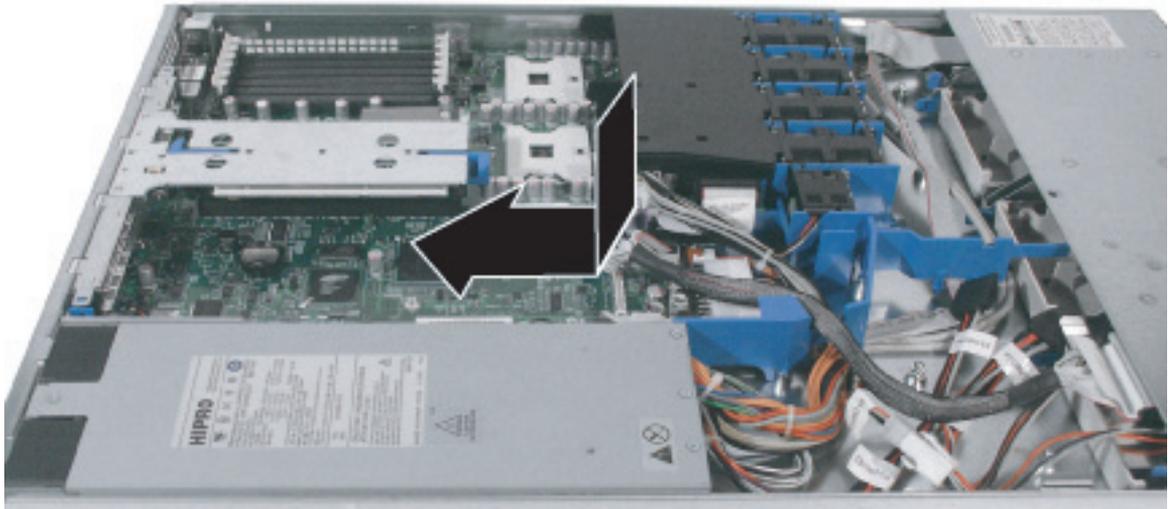
12 Replace the 9 system board screws you removed in .

13 Reinstall the memory by following the instructions in "Installing memory" on page 65.

14 Reinstall the processors by following the instructions in "Installing a processor" on page 76.

15 Reinstall the fan module by following the instructions in "Replacing a system fan" on page 75.

16 Reattach the cables you removed in Step 7.

17 Reinstall the PCI riser assembly by following the instructions in "Removing and installing the PCI riser assembly" on page 69.

18 Follow the instructions in "Installing the processor air duct" on page 42.

19 Follow the instructions in "Closing the server case" on page 39.

20 Turn on your server, then press **F2** when the Gateway logo screen appears during startup.

21 Check BIOS settings to make sure that they detect the server's new hardware, then save your changes (if any) and close the BIOS Setup utility.

22 If your server does not start after installing the new system board, contact Gateway Customer Care. For more information, see "Getting Help" on page 7.

Chapter 5

Using the BIOS Setup Utility

- Opening the BIOS Setup utility
- Updating the BIOS
- Resetting the BIOS settings to their factory defaults
- Resetting the BIOS passwords

Opening the BIOS Setup utility

The BIOS Setup utility stores basic settings for your server. These settings include basic hardware configuration, resource settings, and password security. These settings are stored and saved even when the power is off.

Caution	The options in the BIOS Setup utility have been set at the factory for optimal performance. Changes to these settings will affect the performance of your server.
	Before changing any settings, write them down in case you need to restore them later. You can record the settings on a printout of this guide's appendix for "BIOS Settings" on page 131.

▶ To open the BIOS Setup utility:

1 Restart your server, then press **F2** when the Gateway logo screen appears during startup.

When you select menu items, the *Item Specific Help* box on the right side of the screen displays specific information about the selection. The command bar across the bottom of the screen shows the keys you press to access help, navigate through the menus, and perform other tasks.

2 Select one of these menus:

- **Main** gives you access to basic information and settings related to your server's hardware and configuration.

- **Advanced** gives you access to information and settings for PCI cards, peripheral devices, memory, and the chipset.

- **Boot** gives you access to information and settings for startup features and startup sequences.

- **Security** gives you access to settings related to system access passwords. For more information, see "Server security" on page 29.

- **Server** gives you access to settings for system management, console redirection, event log configuration, and fault-resilient boot settings.

- **Exit** gives you access to options for closing the BIOS Setup utility.

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Updating the BIOS

If you need a new version of the BIOS, you can download the BIOS update from Gateway, then install the new version from a diskette.

▶ To update the BIOS:

1 Print the appendix for "BIOS Settings" on page 131.

2 Restart your server, then press **F2** when the Gateway logo screen appears during startup.

3 Record any custom BIOS settings on your printout.

4 Download the BIOS update from support.gateway.com.

5 Follow the instructions in the self-extracting BIOS update file.

6 Enter any custom BIOS settings you recorded in Step 3, then save your changes and close the BIOS Setup utility.

7 Follow the instructions in "Updating the FRU/SDR" on page 32.

◼

Rolling BIOS

The BIOS flash memory of this server is divided into two partitions: a primary (active) partition from which the server boots, and a secondary partition to which BIOS updates are diverted. When a BIOS update occurs, the existing BIOS image is preserved on the primary partition and the system is automatically prompted to attempt to boot from the new BIOS (on the secondary partition). If a boot failure occurs with the new BIOS, the system will revert to the old BIOS on the other partition.

▶ To manually select the BIOS boot partition:

1 Turn off the server, then disconnect the power cords and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

Caution ⚠	Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cords and all other cables before changing the jumper.

3 Remove the jumper across pins 1-2 of jumper J1A4 (at the left back of the system board), then place the jumper across pins 2-3.
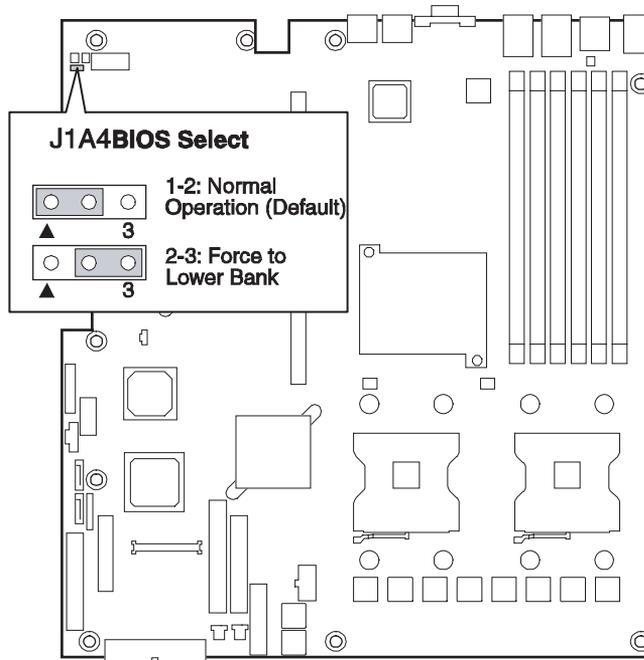
4 Follow the instructions in "Closing the server case" on page 39.

5 Reconnect the power cords and turn on the server. The BIOS is forced to boot from the lower partition.

6 Turn off the server, then disconnect the power cords and all other cables connected to the server.

7 Follow the instructions in "Opening the server case" on page 38.

8 Place the jumper back onto pins 1-2.

9 Follow the instructions in "Closing the server case" on page 39.

Recovering the BIOS

If you encounter a problem while you are updating the BIOS, such as a power outage, the BIOS update may not be successful. If the system continues to try to boot from the new, corrupted BIOS, you can manually recover the old BIOS so you can try another update.

▶ To recover the old BIOS:

1 Turn on or restart the server.

2 Press and hold **CTRL+HOME**. The old BIOS is recovered.

⬛

▶ To manually recover the BIOS:

1 Turn off the server, then disconnect the power cords and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 44.

Caution ⚠	Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cords and all other cables before changing the jumper.

3 Remove the jumper across pins 2-3 of jumper J1H3 (Rcvr Boot), then place the jumper across pins 1-2.
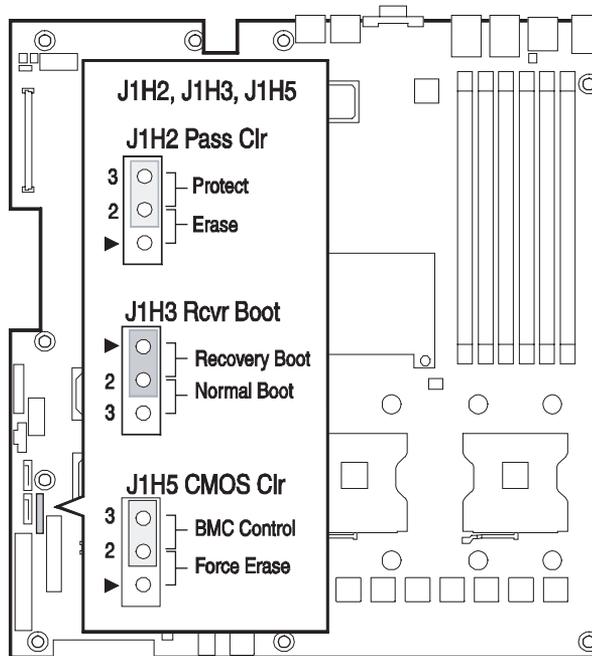
4 Follow the instructions in "Closing the server case" on page 39.

5 Insert a DOS-bootable USB *disk-on-key* or DOS-bootable CD containing a valid BIOS image.

6 Reconnect the power cords and turn on the server. The BIOS recovery is initiated.

While the BIOS is being recovered, the monitor displays a blue screen and the server will beep continually. The process is complete when the server stops beeping.

7 Remove the bootable USB *disk-on-key* or CD.

**8** Turn off the server, then disconnect the power cords and all other cables connected to the server.

9 Follow the instructions in "Opening the server case" on page 38.

10 Place the jumper back onto pins 2-3.

11 Follow the instructions in "Closing the server case" on page 39.

12 Plug in the AC power cords and turn on the server, then verify that the recovery was successful.

Resetting the BIOS

You can use two methods to clear all BIOS Setup settings and return them to the factory defaults:

- Press the power and reset buttons on the front of the server.
- Move the Clear BIOS jumper on the system board.

▶ **To reset the BIOS using the power and reset buttons:**

1 Print the appendix for BIOS Settings in this guide.

2 Restart your server, then press **F2** when the Gateway logo screen appears during startup.

3 Record any custom BIOS settings on your printout.

4 Press the reset button and hold it down for four seconds or more, then press the power button while continuing to hold down the reset button.

5 Release both buttons at the same time. The BIOS is reset.

■

▶ **To reset the BIOS using the system board jumper:**

1 Print the appendix for BIOS Settings in this guide.

2 Restart your server, then press **F2** when the Gateway logo screen appears during startup.

3 Record any custom BIOS settings on your printout.

4 Follow the instructions in "Preventing static electricity discharge" on page 37.

5 Turn off the server, then disconnect the power cord and all other cables connected to the server.

6 Follow the instructions in "Opening the server case" on page 38.

| Caution ⚠ | Moving the jumper while the power is on can damage your server. Always turn off the server and unplug the power cord and all other cables before changing the jumper. |

7 Place a jumper across the Force Erase pins (1-2) of jumper J1H5 (CMOS Clr).
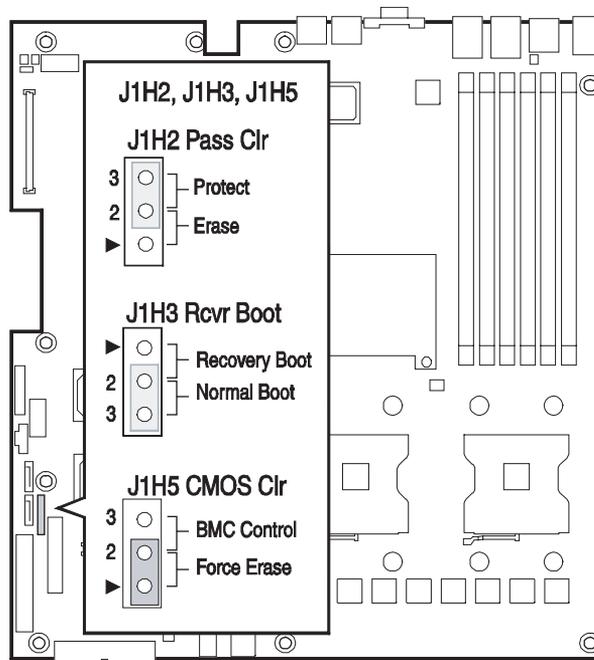
8 Reconnect the power cords and turn on the server. The BIOS settings are cleared.

9 Turn off the server, then disconnect the power cords and all other cables connected to the server.

10 Place the jumper back onto pins 2-3.

11 Follow the instructions in "Closing the server case" on page 39.

Resetting BIOS passwords

To reset BIOS password(s), you must either reset and clear all BIOS settings or use the Password Clear jumper. To reset BIOS passwords, follow the instructions in "Resetting the BIOS" on page 97.

To clear the BIOS password(s):

1 Turn off the server, then disconnect the power cords and all other cables connected to the server.

2 Follow the instructions in "Opening the server case" on page 38.

3 Remove the jumper across pins 2-3 of jumper J1H2 (Pass Clr), then place the jumper across pins 1-2.
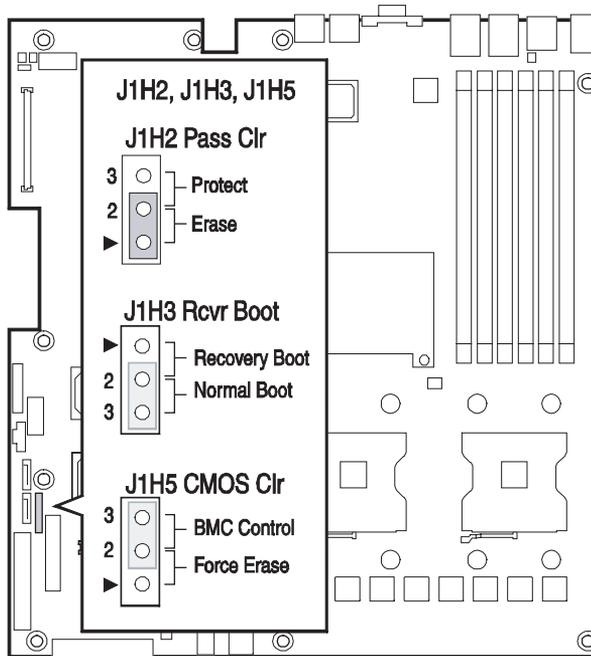
4 Reconnect the power cords and turn on the server. The BIOS password(s) is cleared.

5 Turn off the server, then disconnect the power cords and all other cables connected to the server.

6 Place the jumper back onto pins 2-3.

7 Follow the instructions in "Closing the server case" on page 39.

Chapter 6

Troubleshooting

- Getting telephone support and training

- Interpreting error messages and codes

- Troubleshooting

  If the suggestions in this chapter do not correct the problem, see "Telephone support" on page 102 for more information about how to get help.

Telephone support

Before calling Gateway Customer Care

If you have a technical problem with your server, follow these recommendations before contacting Gateway Customer Care:

- Make sure that your server is connected correctly to a grounded AC outlet that is supplying power.

- If a peripheral device, such as a keyboard or mouse, does not appear to work, make sure that all cables are plugged in securely and plugged into the correct port or jack.

- If you have recently installed hardware or software, make sure that you have installed it following the instructions provided with it. If you did not purchase the hardware or software from Gateway, see the manufacturer's documentation and technical support resources.

- If you have "how to" questions about using a program, see:

  - The program's online Help

  - The program's documentation

  - Your operating system's documentation

  - The software or hardware manufacturer's Web site

- See .

- Have your client ID, serial number (located on the back of your server case), and order number available, along with a detailed description of your issue, including the exact text of any error messages, and the steps you have taken.

- Make sure that your server is nearby at the time of your call. The technician may have you follow appropriate troubleshooting steps.

- Consider using Gateway's online technical support. Gateway's Web site has FAQs, tips, and other technical help. You can also use the Web site to e-mail Customer Care. For more information, visit Gateway's Customer Care Web site at support.gateway.com.

Telephone support

Gateway offers a wide range of customer service, technical support, and information services.

Telephone numbers

You can access the following services through your telephone to get answers to your questions:

Resource	Service description NEW	How to reach
Gateway's fee-based software tutorial service	Get tutorial assistance for software issues.	800-229-1103 (charged to your credit card)
Gateway Customer Care	Talk to a Gateway Customer Care representative about a non-tutorial technical support question.	877-485-1464 (US)(option #6) 800-846-3609 (Canada and Puerto Rico 605-232-2191 (all other countries)
Sales, accounting, and warranty	Get information about available systems, pricing, orders, billing statements, warranty service, or other non-technical issues.	800-846-2000 (US) 888-888-2037 (Canada)

Tutoring and training

Gateway's Customer Care professionals cannot provide hardware and software training. Instead, Gateway recommends the following training resource.

Resource	Service description	For more information
Gateway Learning Libraries	A variety of courses and tutorials are available on CD. Select from several easy-to-use learning libraries.	www.gateway.com/training

Safety guidelines

While troubleshooting your server, follow these safety guidelines:

■ Never remove the top panel while your server is turned on and while the modem cable and the power cords are connected.

■ Do not attempt to open the monitor. To do so is extremely dangerous. Even if the power is disconnected, energy stored in the monitor components can be dangerous. Also, opening the monitor voids its warranty.

■ Make sure that you are grounded correctly before opening the server. For more information about preventing damage from static electricity, see "Preventing static electricity discharge" on page 37.

■ After you complete any maintenance task where you have to open the server case, make sure that you close the case and reconnect all cables before you restart your server.

Warning	To avoid bodily injury, do not attempt to troubleshoot your server problem if:
	▪ The power cord or plug is damaged ▪ Liquid has been spilled into your server ▪ Your server was dropped ▪ The case was damaged
	Instead, unplug your server and contact a qualified computer technician. If your server was damaged during shipment from Gateway, contact Gateway Customer Care. For more information, see "Telephone support" on page 102.

Error messages

These messages often indicate procedural errors such as typing an incorrect keystroke or trying to save a file to a write-protected diskette. Some messages, however, may indicate a problem that requires further troubleshooting.

Diskette drive 0 seek to track 0 failed
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the drive settings are correct.

Error loading operating system
- The master boot record may be corrupt. For troubleshooting information, see "The master boot record is corrupted" on page 120.

Hard disk controller failure
- Make sure that the hard drive cable is connected securely.

- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the correct drive type is selected.

Hard disk controller failure - press F1 to try reboot
- The drive controller may be defective. Press **F1** to try to restart the server. For more information about running diagnostics on your hard drive, see your operating system's documentation.

Insert bootable media device
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the drive settings are correct.

- See "The master boot record is corrupted" on page 120 for a possible solution.

Invalid configuration information
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the settings are correct.

- Reset the BIOS. For instructions, see "Resetting the BIOS" on page 97.

Invalid partition table
- The master boot record may be corrupt. For troubleshooting information, see "The master boot record is corrupted" on page 120.

Invalid password
- Enter your password again. Some passwords are case sensitive.

- If you do not know the password, you may need to reinstall the software you are trying to access.

- System startup passwords are stored in BIOS. If this password has been set and you do not know it, you may be able to reset the password through system board jumper settings. For instructions, see "Resetting BIOS passwords" on page 98.

Memory errors were detected while the system started up
- See "Memory errors were detected during server start up" on page 120 for a possible solution.

Memory size error
- Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Save the memory configuration.

Missing operating system
- The master boot record may be corrupt. For troubleshooting information, see "The master boot record is corrupted" on page 120.

System Event Log Full
- Clear the event log. To clear the event log, restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Select the **Server** menu, then select the **Event Log Configuration** menu.

Troubleshooting

First steps

Try these steps first before going to the following sections:

■ Make sure that the power cord is connected to your server and an AC outlet and that the AC outlet is supplying power.

■ If you use a surge protector or a UPS, make sure that it is turned on and is rated to handle the power required by your server.

■ If you added or removed server components before the problem started, review the installation procedures you performed and make sure that you followed each instruction. You may need to remove the device, uninstall the device's software, then reinstall the device.

■ If an error message appears on the screen, write down the exact message before calling Gateway Customer Care. For instructions, see "Telephone support" on page 102.

■ Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Check your configuration settings.

■ When diagnosing problems, press the non-maskable interrupt (NMI) button with a straightened paper clip to put the server into a halt state. For the location of the button, see "Control panel" on page 2.

■ If an error occurs in a program, see its documentation or online help.

Warning	To avoid bodily injury, do not attempt to troubleshoot your server problem if:
	▪ The power cord or plug is damaged
	▪ Liquid has been spilled into your server
	▪ Your server was dropped
	▪ The case was damaged
	Instead, unplug your server and contact a qualified computer technician or Gateway Customer Care.

Battery replacement

If you have problems after installing a new CMOS battery, try each of the following items, closing the case and restarting the server after each try:

■ Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Correct any discrepancies.

■ Remove the top panel by following the instructions in "Opening the server case" on page 38, then make sure that all cables inside the case are attached securely. Also, make sure that the colored cable edges are aligned correctly and that the connectors do not miss any pins.

Warning ⚠	To avoid bodily injury, do not attempt to troubleshoot your server problem if: • The power cord or plug is damaged • Liquid has been spilled into your server • Your server was dropped • The case was damaged Instead, unplug your server and contact a qualified computer technician or Gateway Customer Care.

■ If you have the correct test equipment, make sure that the new battery has power. Although unlikely, your new battery may be defective.

Beep codes

Whenever a recoverable error occurs during the power-on self-test (POST), the BIOS displays an error message that describes the problem. The BIOS also sounds a beep code (one long tone followed by two short tones) during POST if the video configuration fails (a faulty video controller) or if an expansion card is not functioning correctly. One short beep indicates the BIOS will boot the operating system. No error found.

A PCI expansion card (for example, a RAID controller) can also issue audible errors by itself, usually consisting of one long tone followed by a series of short tones. For more information on the beep codes issued, check the documentation for that device.

The following table shows POST error beep codes. Prior to system video initialization, BIOS uses these codes to inform users of error conditions.

Beeps	Description	Troubleshooting steps
1	Memory refresh timer error	Reseat the memory modules or replace with modules you know are good.
2	Parity error in the first 64 KB of memory.	Same as for 1 beep.
3	Base memory read/write test error	Same as for 1 beep.

Beeps	Description	Troubleshooting steps
4	System board timer not operational.	Possible system board malfunction. To eliminate the possibility of an add in-card problem, remove all expansion cards. ■ If the beep code occurs even when all expansion cards have been removed, the system board is at fault. ■ If the beep code does not occur when the expansion cards have been removed, one of the cards is causing the problem. Install the cards one at a time until the problem happens again. When the beep code returns, the most recent card you installed is at fault.
5	A processor on the system board generated an error.	Try replacing the processors with known good processors. Same as for 4 beeps.
6	The keyboard controller (8042) may be defective. The BIOS cannot switch to Protected mode.	Remove the keyboard to see if the error goes away. If it does, try a known good keyboard. Same as for 4 beeps.
7	General exception error (processor exception error).	Same as for 4 beeps. Same as for 5 beeps
8	Display memory error (system video adapter).	If the system video adapter is an add-in card, replace or reseat the video adapter. If the video adapter is integrated into the system board, the board may be faulty. Try using an add-in card.
9	The ROM checksum value does not match the value encoded in the BIOS.	Same as for 4 beeps.
10	The shutdown register for CMOS RAM failed.	Same as for 4 beeps.
11	The cache memory test failed.	Same as for 4 beeps.

LED information

The system board in this server includes LEDs that can assist you in troubleshooting your system. See the following table for a description of these LEDs and the information they provide:

LED Name	Function	Location	Color	Description
System ID	Aids in server identification	Control panel and left back of system board	Blue	Flashing = Server identification enabled
System Fault	Visible fault warning	Front panel and left back of system board	Green or Orange	▪ On = No fault ▪ Green blink = Degraded ▪ Orange = Critical error or non-recoverable ▪ Orange blink = Non critical
ATA Activity	Front panel	Front panel and left side of system board	Green	Blinking = Drive active
DIMM Fault	Identify failing memory module	On the system board, at the back of each DIMM socket	Orange	On = Fault
POST Code diagnostic LEDs 1-4 (LSB, bit1, bit2, MSB)	Display boot 80 POST code	On the left back of the system board	Each LED can be Off, Green, Orange, or Red	See "Diagnostic LEDs" on page 110
5v Standby	Identify 5v standby power on state	At the front left of the system board	Orange	On = 5v standby power on
Power LED	Identify the power state of the system	Front panel	Green	▪ Off = Power is off (or S5) ▪ On = Power is on (or S0) ▪ Slow blink = Low power state (S1-S3)

Diagnostic LEDs

The BIOS sends a 1-byte hex code to port 80 prior to each POST task. These codes are displayed on four tri-colored LEDs, located on the system board and available at the back of the server chassis. These codes can provide troubleshooting information in the event of a system hang during POST.

POST code checkpoints

The following table shows the checkpoints, LED codes, and task description of events that may occur during the POST portion of the BIOS:

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
03	Off	Off	G	G	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Off	G	Off	Off	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initialize data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system.
05	Off	G	Off	G	Initialize the interrupt controller in hardware (generally PIC) and interrupt vector table.
06	Off	G	G	Off	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
08	G	Off	Off	Off	Initialize the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	R	R	Off	Off	Early CPU Init Start — Disable Cache - Init Local APIC
C1	R	R	Off	G	Set up boot strap processor information.
C2	R	R	G	Off	Set up boot strap processor for POST.
C5	R	O	Off	G	Enumerate and set up application processors.
C6	R	O	G	Off	Re-enable cache for boot strap processor.
C7	R	O	G	G	Early CPU Init Exit.
0A	G	Off	G	Off	Initialize the 8042 compatible keyboard controller.
0B	G	Off	G	G	Detect the presence of PS/2 mouse.
0C	G	G	Off	Off	Detect the presence of keyboard in KBC port.

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
0E	G	G	G	Off	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Trap the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Off	Off	G	O	Early POST initialization of chipset registers.
24	Off	G	R	Off	Uncompress and initialize any platform specific BIOS modules.
30	Off	Off	R	R	Initialize System Management Interrupt.
2A	G	Off	O	Off	Initialize different devices through DIM. See "DIM code checkpoints" on page 117 for more information.
2C	G	G	R	Off	Initialize different devices. Detects and initializes the video adapter installed in the system that has optional ROMs.
2E	G	G	O	Off	Initialize all the output devices.
31	Off	Off	R	O	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Off	Off	O	O	Initialize the silent boot module. Set the window for displaying text information.
37	Off	G	O	O	Displaying sign-on message, CPU information, setup key message, and any OEM-specific information.
38	G	Off	R	R	Initialize different devices through DIM. See "DIM code checkpoints" on page 117 for more information.
39	G	Off	R	O	Initialize DMAC-1 and DMAC-2.
3A	G	Off	O	R	Initialize RTC date/time.
3B	G	Off	O	O	Test for total memory installed in the system. Also, check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	G	G	R	R	Mid-POST initialization of chipset registers.
40	Off	R	Off	Off	Detect different devices (parallel ports, serial ports, and coprocessor in CPU, and so on) successfully installed in the system and update the BDA, EBDA, and so on.
50	Off	R	Off	R	Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size, if needed.

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
52	Off	R	G	R	Update CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory.
60	Off	R	R	Off	Initialize NUM-LOCK status and programs the KBD typematic rate.
75	Off	O	R	O	Initialize Int-13 and prepare for IPL detection.
78	G	R	R	R	Initialize IPL devices controlled by BIOS and option ROMs.
7A	G	R	O	R	Initialize remaining option ROMs.
7C	G	O	R	R	Generate and write contents of ESCD in NVRam.
84	R	G	Off	Off	Log errors encountered during POST.
85	R	G	Off	G	Display error to the user and gets the user response to error.
87	R	G	G	G	Execute BIOS setup if needed/requested.
8C	O	G	Off	Off	Late POST initialization of chipset registers.
8D	O	G	Off	G	Build ACPI tables (if ACPI is supported).
8E	O	G	G	Off	Program the peripheral parameters. Enable/disable NMI as selected.
90	R	Off	Off	R	Late POST initialization of system management interrupt.
A0	R	Off	R	Off	Check boot password if installed.
A1	R	Off	R	G	Clean-up work needed before booting to operating system.
A2	R	Off	O	Off	Take care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft® IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display, if needed.
A4	R	G	R	Off	Initialize runtime language module.
A7	R	G	O	G	Display the system configuration screen, if enabled. Initialize the CPUs before boot, including the programming of the MTRRs.
A8	O	Off	R	Off	Prepare CPU for operating system boot, including final MTRR values.
A9	O	Off	R	G	Wait for user input at config display, if needed.
AA	O	Off	O	Off	Uninstall POST INT1Ch vector and INT09h vector. De-initializes the ADM module.

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
AB	O	Off	O	G	Prepare BBS in Int 19 boot.
AC	O	G	R	Off	End of POST initialization of chipset registers.
B1	R	Off	R	O	Save system context for ACPI.
00	Off	Off	Off	Off	Pass control to OS Loader (typically INT19h).
61-70	-	-	-	-	OEM POST Error. This range is reserved for chipset vendors and system manufacturers. The error associated with this value may be different from one platform to the next.

Bootblock initialization code checkpoints

The Bootblock initialization code sets up the chipset, memory, and other components before system memory is available. The following table provides the diagnostic LED codes for these checkpoints and describes the type of checkpoints that may occur during the bootblock initialization:

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
Before D1	R	R	Off	O	Early chipset initialization is done. Early super I/O initialization is done, including RTC and keyboard controller, NMI is disabled.
D1	R	R	Off	O	Perform keyboard controller BAT test. Check if waking up from power management suspend state. Save power-on CPUID value in scratch CMOS.
D0	R	R	Off	R	Go to flat mode with 4 GB limit and GA20 enabled. Verify the bootblock checksum.
D2	R	R	G	R	Disable CACHE before memory detection. Execute full memory sizing module. Verify that flat mode is enabled.
D3	R	R	G	O	If memory sizing module not executed, start memory refresh and do memory sizing in Bootblock code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	R	O	Off	R	Test base 512 KB memory. Adjust policies and cache first 8 MB. Set stack
D5	R	O	Off	O	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM.

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
D6	R	O	G	R	Both key sequence and OEM-specific method is checked to determine if BIOS recovery is forced. Main BIOS checksum is tested. If BIOS recovery is necessary, control flows to checkpoint E0. See Bootblock Recovery Code Checkpoints section of document for more information.
D7	R	O	G	O	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	O	R	Off	R	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	O	R	Off	O	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1 MB Read-Write, including E000 and F000 shadow areas, but closing SMRAM.
DA	O	R	G	R	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel).See "POST code checkpoints" on page 111 for more information.
E1-E8 EC-EE	-	-	-	-	OEM memory detection/configuration error. This range is reserved for chipset vendors and system manufacturers. The error associated with this value may be different from one platform to the next.

Bootblock recovery code checkpoints

The bootblock recovery code gets control when the BIOS determines that a BIOS recovery needs to occur because the user has forced the update or the BIOS checksum is corrupt. The following table provides the diagnostic LED codes for these checkpoints and describes the type of checkpoints that may occur during the Bootblock recovery portion of the BIOS:

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
E0	R	R	R	Off	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	O	R	R	G	Set up floppy controller and data. Attempt to read from floppy.
EA	O	R	O	Off	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	O	R	O	G	Disable ATAPI hardware. Jump back to checkpoint E9.

Check point	Diagnostic LED decoder G=Green, R=Red, O=Orange				Description
EF	O	O	O	G	Read error occurred on media. Jump back to checkpoint EB.
F0	R	R	R	R	Search for pre-defined recovery file name in root directory.
F1	R	R	R	O	Recovery file not found.
F2	R	R	O	R	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.
F3	R	R	O	O	Start reading the recovery file cluster by cluster.
F5	R	O	R	O	Disable L1 cache.
FA	O	R	O	R	Check the validity of the recovery file configuration to the current configuration of the flash part.
FB	O	R	O	O	Make flash write-enabled through chipset and OEM-specific method. Detect correct flash part. Verify that the found flash part size equals the recovery file size.
F4	R	O	R	R	The recovery file size does not equal the found flash part size.
FC	O	O	R	R	Erase the flash part.
FD	O	O	R	O	Program the flash part.
FF	O	O	O	O	The flash has been updated successfully. Make flash write-disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

DIM code checkpoints

The Device Initialization Manager (DIM) gets control at various times during BIOS POST to initialize different system buses. The following table describes the main checkpoints where the DIM module is accessed.

Checkpoint	Description
2A	Initialize different buses and perform the following functions: • Reset, Detect, and Disable (function 0) — Disables all device nodes, PCI devices, and PnP ISA cards. It also assigns PCI bus numbers. • Static Device Initialization (function 1) — Initializes all static devices that include manual configured onboard peripherals, memory and I/O decode windows in PCI-PCI bridges, and noncompliant PCI devices. Static resources are also reserved. • Boot Output Device Initialization (function 2) — Searches for and initializes any PnP, PCI, or AGP video devices.
38	Initialize different buses and perform the following functions: • Boot Input Device INitialization (function 3) — Searches for and configures PCI input devices and detects if system has standard keyboard controller. • IPL Device Initialization (function 4) — Searches for and configures all PnP and PCI boot devices. • General Device Initialization (function 5) — Configures all onboard peripherals that are set to an automatic configuration and configures all remaining PnP and PCI devices.

ACPI runtime checkpoints

ACPI checkpoints are displayed when an ACPI-capable operating system either enters or leaves a sleep state. The following table describes the types of checkpoints that may occur during ACPI sleep or wake events:

Checkpoint	Description
AC	First ASL checkpoint. Indicates that the system is running in ACPI mode.
AA	System is running in APIC mode.
01, 02, 03, 04, 05	Entering sleep state S1, S2, S3, S4, or S5.
10, 20, 30, 40, 50	Waking from sleep state S1, S2, S3, S4, or S5.

BIOS

The settings in the BIOS Setup utility are not retained
■ Replace the CMOS battery. For instructions, see "Replacing the CMOS battery" on page 84.

CD drive

Your server does not recognize a CD or the CD drive
■ Restart your server, then open the BIOS Setup utility by pressing and holding **F2** while your server restarts. Make sure that the IDE controllers are enabled. For more information, see "Using the BIOS Setup Utility" on page 91.

■ Reinstall the device driver. For instructions, see "Using your System Companion CD" on page 33.

■ Make sure that the drive is configured correctly by following the instructions in the drive's documentation.

■ To check the installation, see "Installing a CD or DVD drive" on page 50 and "Removing a CD or DVD drive" on page 52.

Your CD drive tray does not open
■ Press a straightened paper clip wire into the CD drive's manual eject hole. The drive tray opens.

■ If this problem happens frequently while the server is turned on, the drive may be defective.

Diskette drive

The diskette drive is not recognized
■ Restart your server.

■ To check the installation, see "Installing a diskette in a converted hard drive bay" on page 45 and "Removing a diskette drive from the converted hard drive bay" on page 49.

The diskette drive LED is lit continuously
■ Remove the diskette from the drive. If the light stays on, try restarting your server.

■ To check the installation, see "Installing a diskette in a converted hard drive bay" on page 45 and "Removing a diskette drive from the converted hard drive bay" on page 49.

Expansion cards

Your server does not recognize an expansion card

■   Restart your server.

■   Make sure that you have installed the necessary software or driver. For instructions, see the card's documentation.

■   Reseat the expansion card and riser card. For instructions, see "Removing and Installing PCI expansion cards" on page 69.

■   If another slot of the correct size is available, install the card in a different slot.

Hard drive

The hard drive cannot be accessed, or you receive a "General failure reading drive C" error message

■   If a diskette is in the diskette drive, eject it and restart your server by pressing the reset button.

■   Restart your server by pressing the reset button.

■   If you have hot-swap drives, turn off your server, then remove all hard drives and push them in again to make sure that the drives are seated correctly. For instructions, see "Installing or replacing a hard drive" on page 53.

■   Reseat the drive cables on the backplane.

■   If your server has been subjected to static electricity or physical shock, you may need to reinstall the operating system.

You receive a "Non-system disk" or "disk error" error message

■   Eject the diskette from the diskette drive, then press ENTER.

■   Make sure that your hard drive has an active partition. For more information, see "The master boot record is corrupted" on page 120.

You are having problems with a SATA drive

■   For normal SATA drives (not SATA RAID), check the BIOS setup utility to see if the BIOS has recognized the drive.

■   Make sure that the power cable and SATA cables are attached securely to the drive cage.

■   If the drive is not detected, try a different SATA port.

■   Try swapping SATA cables between drives to determine if the cable is defective.

■   Try listening to the drive to determine if the drive is spinning up. If not, the drive may be defective.

The master boot record is corrupted
■ In a Windows network operating system, repair the master boot record using FDISK.

▶ **To repair the master boot record:**

■ At a DOS command prompt, type **fdisk/mbr**, then press ENTER.

■

Internet

See also *Modem*.

You cannot connect to the Internet
■ Make sure that your account with your Internet Service Provider (ISP) is set up correctly. Contact your ISP technical support for help.

■ Make sure that you do not have a problem with your modem. For more information, see "Modem (telephone dial-up)" on page 120.

Keyboard

Liquid has been spilled into the keyboard
■ If you spilled liquid in the keyboard, turn off your server and unplug the keyboard. Clean the keyboard and turn it upside down to drain it. Let the keyboard dry before using it again. If the keyboard does not work after it dries, you may need to replace it. This type of damage is not covered by your server's warranty.

Memory

Memory errors were detected during server start up
■ Open your server and make sure that the memory modules are installed correctly. For instructions, see "Installing memory" on page 65.

■ A memory module may be defective. If possible, try another memory module and see if the error repeats.

Modem (telephone dial-up)

See also *Internet*.

Your modem does not dial or does not connect

■ Make sure that your server is connected to the telephone line and the telephone line has a dial tone.

■ Make sure that the modem cable is less than 6 feet (1.8 meters) long.

■ Remove any line splitters or surge protectors from your telephone line, then check for a dial tone by plugging a telephone into the telephone jack.

■ If you have additional telephone services such as call waiting, call messaging, or voice mail, make sure that all messages are cleared and call waiting is disabled before using the modem. Contact your telephone service to get the correct code to temporarily disable the service. Also make sure that the modem dialing properties are set correctly.

■ If you purchased the modem from Gateway, contact Gateway Customer Care.

▶ To check the dialing properties in Windows:

In Windows Server 2003, click **Start**, then click **Control Panel**. The *Control Panel* window opens.

1 Click/Double-click the **Modems** icon, then click **Dialing Properties**. The *Dialing Properties* dialog box opens.

2 Make sure that all settings are correct.

■ Make sure that you are not using a digital, rollover, or PBX line. These lines do not work with your modem.

■ Check for line noise (scratchy, crackling, or popping sounds). Line noise is a common problem that can cause the modem to connect at a slower rate, abort downloads, or even disconnect. The faster the modem, the less line noise it can tolerate and still work correctly.

Listen to the line using your telephone. Dial a single number (such as 1). When the dial tone stops, listen for line noise. Wiggle the modem cable to see if that makes a difference. Make sure that the connectors are free from corrosion and all screws in the wall or telephone jack are secure.

You can also call your telephone service and have your telephone line checked for noise or low line levels.

■ Try connecting with the modem at a lower connection speed. If reducing the connection speed lets you connect, contact your telephone service. The telephone line may be too noisy.

■ Try another telephone line (either a different telephone number in your business or a telephone line at a different location). If you can connect on this line, call your telephone service.

Your 56K modem does not connect at 56K

Current FCC regulations restrict actual data transfer rates over public telephone lines to 53K. Other factors, such as line noise, telephone service provider equipment, or ISP limitations, may lower the speed even further.

If your system has a v.90 modem, the speed at which you can upload (send) data is limited to 33.6K. If your system has a v.92 modem, the speed at which you can upload data is limited to 48K. Your ISP may not support 48K uploads.

The modem is not recognized by your server

■ If the modem shares the telephone line with another device, make sure that the telephone line is not in use (for example, someone is on the telephone, or another modem is in use).

■ Shut down and restart your server.

■ Reinstall the modem device driver. For instructions, see "Using your System Companion CD" on page 33.

■ Open your server and reseat the modem. For instructions, see "Removing and Installing PCI expansion cards" on page 69.

Monitor

Your server is running but there is no picture

■ Adjust the brightness and contrast controls to the center position.

■ Make sure that the monitor is plugged in and turned on. If the monitor is turned on, the power LED should be lit.

■ Check the port and cable for bent or damaged pins.

■ Connect your monitor to another computer, or connect a monitor that you know works to your server.

The color is not uniform

Make sure that the monitor warms up for at least 30 minutes before making a final judgment about color uniformity.

Make sure that:

■ The monitor is not positioned too close to another monitor, fan, or fluorescent light.

■ You demagnetize the screen using the monitor's degauss feature. For more information on degauss, see the monitor's documentation.

A horizontal line or wire is visible across the monitor screen
The monitor may use thin *damper* wires, located approximately 1/3 of the way from the upper and lower screen edges, to stabilize the internal aperture grille. These wires are most obvious when the monitor displays a white background. The aperture grille allows more light to pass through the screen for brighter colors and greater luminescence. The damper wire is a critical part of the overall monitor design and does not negatively affect the monitor's function.

Power

You press the power button, but the server does not turn on
- If the power button LED is green, the server is turned on, but you may not be seeing an image on the monitor. For monitor troubleshooting, see "Monitor" on page 122.

- If your server is plugged into a surge protector or UPS, make sure that the surge protector or UPS is connected securely to an electrical outlet, turned on, and working correctly. One way to check this is to plug the server directly into a wall outlet, bypassing the surge protector or UPS.

- Make sure that the electrical outlet is working by plugging a working device, such as a lamp, into the outlet, then turning it on to test the outlet.

- Open your server and make sure that the power supply module cage cable is connected correctly to the system board.

- If you recently added or upgraded any hardware on your server, return the server to the original configuration.

- With the exception of the power cord, disconnect all external cables, including the keyboard and mouse.

When you turn on the server, it makes several short beeps
- The short beeps indicate the server has encountered some type of error. See "Beep codes" on page 108.

Processor

Your server does not recognize a new processor
- Make sure that the processor is fully seated in its socket. The processor should be recognized automatically if it is installed correctly.

- If you have upgraded your server from one processor to two, you may need to reconfigure your operating system so it recognizes the additional processor. For instructions, see your operating system's documentation.

Appendix A

Server Specifications

The following specifications are for the standard configuration. Your server may contain optional equipment. All specifications are subject to change.

System specifications

Case size	26.46 × 16.93 × 1.7 inches (67.21 × 43 × 4.32 cm) (without handles)
Weight	Varies by configuration. A fully loaded server weighs about 31 lbs. (14.06 kg)
Fans	Four 40×40×55 mm dual-rotor fans One 40×40×28 mm single-rotor fan Two 40×40×28 mm single-rotor fans in the power supply
Ports	▪ PS/2 keyboard or mouse (2) ▪ USB (3) ▪ Serial (1) (RJ-45) ▪ Video (2) ▪ LAN (2) (RJ-45)
Drives (standard)	One slimline bay for a CD drive (standard), or a DVD drive (optional) One USB diskette drive (not installed in server)
Card sizes	Supports one full-length, full-height and one low-profile PCI expansion card
Power supply	450 W
Operating systems	Supports Windows Server 2003, Windows Small Business Server 2003, Novell Netware, and SuSE Linux. Compatible with: ▪ Windows 2000 Server ▪ Novell NetWare 6.5
Certifications	▪ FCC Class A ▪ UL ▪ cUL

System board specifications

Processor   Dual socket 604 package

800 MHz front side bus

Supports as many as two Intel Xeon CPUs (2.8 GHz minimum)

Chipset   Intel E7320

- 800 MHz FSB
- Intel E7320 MCH memory controller (Northbridge)
- Intel 6300ESB ICH I/O controller (Southbridge)

Memory

- Six DIMM slots support from 256 MB to 12 GB (using DDR333 or DDR266 DIMMs) total memory
- Use only DDR266 or DDR333 compliant, x72 ECC, registered, 184-pin, low profile (LP) SDRAM modules.
- Memory sparing (optional)

PCI device/slot   PCI riser assembly, featuring:

- One full-length, full-height 64-bit PCI riser (PCI, PCI-X or PCI-Express)
- One low-profile (LP) 64-bit PCI-X riser (up to 66 MHz)

VGA   On-board ATI Rage XL

- 8 MB SDRAM
- Up to 1600 × 1200 (2D)
- Up to 1024 × 768 (3D)

LAN

- Intel 82546EB controller
- Dual onboard 10/100/1000 network interface
- IEEE 850.3u auto-negotiation support
- Full duplex support

Hard Drive

- Ultra ATA/100 support (1 connector, 2 channels)
- Up to 3 SATA fixed drives (RAID level 0 or 1 supported)
- Up to 3 SATA hot-swap drives (optional) (RAID level 0 or 1 supported)

ACPI   ACPI compliance

Supports:

- S0
- S1
- S4
- S5

Environmental specifications

The following specifications identify maximum environmental conditions. At no time should the server run under conditions which violate these specifications.

Variable	Requirements
Temperature	Maximum rate of change: 18°F (10°C) per hour
	Nonoperating: -40° to 158°F (-40° to 70°C)
	Operating: 50° to 95°F (10° to 35°C); derated 0.9°F (0.5°C) for every 1,000 feet (305 meters). Use of 2 GB DIMMs derates the server to 86°F (30°C)
Altitude	10,000 feet (3,048 meters) maximum
Humidity	Nonoperating: 90% relative (noncondensing) at 86° F (30° C)
Shock	Operating - 2.0 g, 11 msec, 1/2 sine
	Packaged - operational after an 18" fall
Electrostatic discharge (ESD)	Tested to 15 kilovolts (kV); no component damage

Additional specifications

For more information about your server, such as memory size, hard drive size, and processor type, visit Gateway's *eSupport* page at support.gateway.com. The *eSupport* page also has links to additional Gateway documentation and detailed specifications for your own server.

Appendix B

BIOS Settings

If you ever need to restore your BIOS settings, such as after a system board change, a record of the settings will make the process much easier. You can print this appendix, then record your custom BIOS settings on the printout. Only settings which can be changed are listed. For a complete list of viewable BIOS settings, run the BIOS Setup utility.

 To view all BIOS settings:

1 Restart your server

2 Press **F2** when the Gateway logo screen appears during startup. The BIOS Setup utility opens.

3 Select menus and submenus to display setting information.

BIOS menu	BIOS submenu	Setting	Value
Main			
		System Overview	
		AMIBIOS (Version, Build date), Processor (Type, Speed, Count)	
		System Memory (Size)	
		System Time	HH:MM:SS
		System Date	DAY MM/DD/YYYY
		Language	**English** French German Italian Spanish
Advanced			
	Processor Configuration		
		Manufacturer	
		Brand String	
		Frequency	
		FSB Speed	
		CPU1 (CPUID, Cache L1, Cache L2, Cache L3)	
		CPU2 (CPUID, Cache L1, Cache L2, Cache L3)	

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BIOS menu	BIOS submenu	Setting	Value
		Max CPUID Value Limit	Enabled **Disabled**
		Hyper-Threading Technology	**Enabled** Disabled
		Intel Speed Step™ Tech	Automatic **Disabled**
	IDE Configuration		
		Onboard P-ATA Channels	Disabled Primary Secondary **Both**
		Onboard S-ATA Channels	Disabled **Enabled**
		Configure S-ATA as RAID	**Disabled** Enabled
		S-ATA Ports Definition	**A1-3rd/A2-4th M** A1-4th/A2-3rd M
		Mixed P-ATA/S-ATA	Selects Mixed P-ATA / S-ATA submenu for configuring mixed P-ATA and S-ATA
		Primary IDE Master	Selects IDE Device Configuration submenu with additional device details/settings
		Primary IDE Slave	Selects IDE Device Configuration sub-menu with additional device details/settings
		Secondary IDE Master	Selects IDE Device Configuration submenu with additional device details/settings

BIOS menu	BIOS submenu	Setting	Value
		Secondary IDE Slave	Selects IDE Device Configuration submenu with additional device details/settings
		Third IDE Master	Selects IDE Device Configuration submenu with additional device details/settings
		Fourth IDE Master	Selects IDE Device Configuration submenu with additional device details/settings
		Hard Disk Write Protect	**Disabled** Enabled
		IDE Detect Time Out (Sec)	0, 5, 10, 15, 20, 25, 30, **35**
		ATA(PI) 80-Pin Cable Detection	**Host & Device** Host Device
	Floppy Configuration		
		Floppy A	Disabled 720 KB 3 1/2" **1.44 MB 3 1/2"** 2.44 MB 3 1.2"
		Onboard Floppy Controller	Disabled **Enabled**
	Super I/O Configuration		
		Serial Port A Address	Disabled **3F8/IRQ4** 2F8/IRQ3 3E8/IRQ4 2E8/IRQ3

BIOS menu	BIOS submenu	Setting	Value
		Serial Port B Address	Disabled
			3F8/IRQ4
			2F8/IRQ3
			3E8/IRQ4
			2E8/IRQ3
	USB Configuration		
		USB Devices Enabled (List of USB devices detected by BIOS)	
		USB Function	Disabled
			Enabled
		Legacy USB Support	Disabled
			Keyboard only
			Auto
			Keyboard and Mouse
		Port 60/64 Emulation	**Disabled**
			Enabled
		USB 2.0 Controller	**Enabled**
			Disabled
		USB 2.0 Controller Mode	FullSpeed (12Mbps)
			HiSpeed (480Mbps)
		USB Mass Storage Device Configuration	Selects USB Mass Storage Device Configuration submenu with USB Device enable
	PCI Configuration		
		Onboard Video	Disabled
			Enabled
		Dual Monitor Video	Enabled
			Disabled
		Onboard NIC 1 (Left)	Disabled
			Enabled

BIOS menu	BIOS submenu	Setting	Value
		Onboard NIC 1 ROM	Disabled **Enabled**
		Onboard NIC 2 (Right)	Disabled **Enabled**
		Onboard NIC 2 ROM	Disabled **Enabled**
		Slot 1 Option ROM	Disabled **Enabled**
		Slot 3 Option ROM	Disabled **Enabled**
		Slot 4 Option ROM	Disabled **Enabled**
	Memory Configuration		
		DIMM 1A (Information)	Installed Not Installed Disabled Spare
		DIMM 1B (Information)	Installed Not Installed Disabled Spare
		DIMM 2A (Information)	Installed Not Installed Disabled Spare
		DIMM 2B (Information)	Installed Not Installed Disabled Spare
		DIMM 3A (Information)	Installed Not Installed Disabled Spare

BIOS menu	BIOS submenu	Setting	Value
		DIMM 3B (Information)	Installed Not Installed Disabled Spare
		Extended Memory Test	1 MB 1 KB Every Location **Disabled**
		Memory Retest	Enabled **Disabled**
		Memory Remap Feature	**Enabled** Disabled
		Memory Sparing (Disabled provides the most memory space. Sparing reserves memory to replace failures.	Spare **Disabled**
Boot			
	Boot Settings Configuration		
		Quick Boot	Disabled **Enabled**
		Quiet Boot	**Disabled** Enabled
		Bootup Num-Lock	**Off** On
		PS/2 Mouse Support	Disabled Enabled **Auto**
		POST Error Pause	Disabled **Enabled**
		Hit <F2> Message Display	Disabled **Enabled**

BIOS menu	BIOS submenu	Setting	Value
		Scan User Flash Area	**Disabled** Enabled
	Boot Device Priority		
		1st Boot Device	Varies (Specifies boot sequence from the available devices. A device enclosed in parenthesis has been disabled.)
		nth Boot Device	Varies (Specifies boot sequence from the available devices. A device enclosed in parenthesis has been disabled.)
	Hard Disk Drive		
		1st Drive	Varies (Specifies boot sequence from the available devices.)
		nth Drive	Varies (Specifies boot sequence from the available devices.)
	Removable Drive		
		1st Drive	Varies (Specifies boot sequence from the available devices.)
		nth Drive	Varies (Specifies boot sequence from the available devices.)
	ATAPI CDROM Drives		

BIOS menu	BIOS submenu	Setting	Value
		1st Drive	Varies (Specifies boot sequence from the available devices.)
		nth Drive	Varies (Specifies boot sequence from the available devices.)
Security			
		Administrator Password is (Installed/Not installed)	
		User Password is (Installed/Not installed)	
		Set Admin Password (Set or clear Admin password)	
		Set User Password (Set or clear User password)	
		User Access Level	No Access View Only **Limited** Full Access
		Clear User Password	(Clears user password)
		Fixed disk boot sector protection	**Disabled** Enabled
		Password On Boot	**Disabled** Enabled
		Secure Mode Timer	**1 minute** 2 minutes 5 minutes 10 minutes 20 minutes 60 minutes 120 minutes

BIOS menu	BIOS submenu	Setting	Value
		Secure Mode Hot Key (Ctrl-Alt-)	[Z] **[L]**
		Secure Mode Boot	**Disabled** Enabled
		Front Panel Switch Inhibit	**Disabled** Enabled
		NMI Control	**Disabled** Enabled
Server			
	System Management		
		Server Board Part Number	Varies
		Server Board Serial Number	Varies
		NIC 1 MAC Address	Varies
		NIC 2 MAC Address	Varies
		System Part Number	Varies
		System Serial Number	Varies
		Chassis Part Number	Varies
		Chassis Serial Number	Varies
		BIOS Version	BIOS ID string (excluding build time/date)
		BMC Device ID	Varies
		BMC Firmware Revision	Varies
		BMC Device Revision	Varies
		PIA Revision	Varies
		SDR Revision	Varies
		HSC FW Revision (HSBP)	Firmware revision of the Hotswap controller. N/A if not present.

BIOS menu	BIOS submenu	Setting	Value
	Serial Console Features		
		BIOS Redirection Port	**Disabled** Serial A Serial B
		Baud Rate	9600 **19.2K** 38.4K 57.6K 115.2K
		Flow Control	No Flow Control **CTS/RTS** XON/XOFF CTS/RTS + CD
		Terminal Type	PC-ANSI **VT100+** VT-UTF8
		ACPI Redirection Port	**Disabled** Serial A Serial B
		Serial Port Connector	Serial A **Serial B**
	Event Log Configuration		
		Clear All Event Logs	**Disabled** Enabled
		BIOS Event Logging	Disabled **Enabled**
		Critical Event Logging	Disabled **Enabled**
		ECC Event Logging	Disabled **Enabled**
		PCI Error Logging	Disabled **Enabled**

BIOS menu	BIOS submenu	Setting	Value
		FSB Error Logging	Disabled **Enabled**
		Hublink Error Logging	Disabled **Enabled**
Server (Cont'd)			
		Assert NMI or SERR	Disabled **Enabled**
		Assert NMI or PERR	Disabled **Enabled**
		Resume on AC Power Loss	**Stays Off** Power On Last State (not supported) (When set to "Stays Off," "Power Switch Inhibit" is disabled)
		FRB-2 Policy	Disable BSP (not supported) Do not disable BSP (not supported) **Retry on Next Boot** Disable FRB2 Timer
		Late POST Timeout	**Disabled** 5 minutes 10 minutes 15 minutes 20 minutes
		Hard Disk OS Boot Timeout	**Disabled** 5 minutes 10 minutes 15 minutes 20 minutes

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BIOS menu	BIOS submenu	Setting	Value
		PXE OS Boot Timeout	**Disabled**
			5 minutes
			10 minutes
			15 minutes
			20 minutes
		OS Watchdog Timer Policy	**Stay On**
			Reset
			Power Off
		Platform Event Filtering	**Enabled**
			Disabled
Exit			
		Save Changes and Exit (**F10**)	
		Discard Changes and Exit (**ESC** key)	
		Discard Changes (**F7**)	
		Load Setup Defaults (**F9**)	
		Load Custom Defaults	
		Save Custom Defaults	

The following 2nd level submenus are accessed from the submenu indicated in the first column.

BIOS submenu	BIOS 2nd level submenu	Setting	Value
IDE Configuration (Cont'd)			
	Mixed P-ATA / S-ATA		
		First ATA Channel	**P-ATA M-S**
			S-ATA M-S
		Second ATA Channel	**S-ATA M-S**
			None

BIOS submenu	BIOS 2nd level submenu	Setting	Value
		3rd and 4th ATA Channels	**A1-3rd/A2-4th M** A1-4th/A2-3rd M None

BIOS submenu	BIOS 2nd level submenu	Setting	Value
IDE Configuration (Cont'd)			
	IDE Device Configuration		
		Device	Device information
		Vendor	Device vendor
		Size	Device size
		LBA Mode	Device LBA mode
		Block Mode	Device block mode
		PIO Mode	Device PIO mode
		Async DMA	Device Async DMA mode
		Ultra DMA	Device Ultra DMA mode
		S.M.A.R.T.	Device S.M.A.R.T. support
		Type	Not Installed **Auto** CDROM ARMD
		LBA/Large Mode	Disabled **Auto**
		Block (Multi-Sector Transfer) Mode	Disabled **Auto**

BIOS submenu	BIOS 2nd level submenu	Setting	Value
		PIO Mode	**Auto**
			0
			1
			2
			3
			4
		DMA Mode	**Auto**
			SWDMA 0-2
			MWDMA 0-2
			UWDMA 0-5
		S.M.A.R.T.	**Auto**
			Disabled
			Enabled
		32Bit Data Transfer	**Disabled**
			Enabled

BIOS submenu	BIOS 2nd level submenu	Setting	Value
USB Configuration (Cont'd)			
	USB Mass Storage Device Configuration		
		USB Mass Storage Reset Delay	10 Sec
			20 Sec
			30 Sec
			40 Sec
		Device #1	Displayed if a device is detected. Includes a DeviceID string returned by the USB device.

BIOS submenu	BIOS 2nd level submenu	Setting	Value
		Emulation Type	**Auto** Floppy Forced FDD Hard Disk CDROM
		Device #n	Displayed if a device is detected. Includes a DeviceID string returned by the USB device.
		Emulation Type	**Auto** Floppy Forced FDD Hard Disk CDROM

Appendix C

Safety, Regulatory, and Legal Information

- Safety information
- Legal and Regulatory Information

Important safety information

Your Gateway system is designed and tested to meet the latest standards for safety of information technology equipment. However, to ensure safe use of this product, it is important that the safety instructions marked on the product and in the documentation are followed.

| Warning | Always follow these instructions to help guard against personal injury and damage to your Gateway system. |

Setting up your system

- Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.
- Do not use this product near water or a heat source such as a radiator.
- Set up the system on a stable work surface.
- The product should be operated only from the type of power source indicated on the rating label.
- If your computer has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.
- Openings in the computer case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space, at least 6 inches (15 cm), around the system for ventilation when you set up your work area. Never insert objects of any kind into the computer ventilation openings.
- Some products are equipped with a three-wire power cord to make sure that the product is properly grounded when in use. The plug on this cord will fit only into a grounding-type outlet. This is a safety feature. If you are unable to insert the plug into an outlet, contact an electrician to install the appropriate outlet.
- If you use an extension cord with this system, make sure that the total ampere rating on the products plugged into the extension cord does not exceed the extension cord ampere rating.
- If your system is fitted with a TV Tuner, cable, or satellite receiver card, make sure that the antenna or cable system is electrically grounded to provide some protection against voltage surges and buildup of static charges.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill anything on the system.
- Some products have a replaceable CMOS battery on the system board. There is a danger of explosion if the CMOS battery is replaced incorrectly. Replace the battery with the same or equivalent type recommended by the manufacturer. Dispose of batteries according to the manufacturer's instructions.
- When the computer is turned off, a small amount of electrical current still flows through the computer. To avoid electrical shock, always unplug all power cables and modem cables from the wall outlets before cleaning the system.
- Unplug the system from the wall outlet and refer servicing to qualified personnel if:
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not operate properly when the operating instructions are followed.
  - The system was dropped or the cabinet is damaged.
  - The system performance changes.

Replacement parts and accessories

Use only replacement parts and accessories recommended by Gateway.

Important	Do not use Gateway products in areas classified as hazardous locations. Such areas include patient care areas of medical and dental facilities, oxygen-laden environments, or industrial facilities.

Warning	To reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.

Regulatory compliance statements

United States of America

Federal Communications Commission (FCC)
Unintentional emitter per FCC Part 15

FCC Part 15 Class A Statement

The server is designated as complying with Class A requirements if it bares the following text on the rating label:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at your own expense.

Caution	Changes or modifications not expressly approved by Gateway could void the FCC compliance and negate your authority to operate the product.

Telecommunications per part 68 of the Code of Federal Regulations (CFR 47)
(applicable to products fitted with USA modems)

Your modem complies with Part 68 of the Code of Federal Regulations (CFR 47) rules. On the computer or modem card is a label that contains the registration number and Ringer Equivalence Number (REN) for this device. If requested, this information must be provided to the telephone company.

A telephone line cord with a modular plug is required for use with this device. The modem is designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68-compliant. See installation instructions for details.

The Ringer Equivalence Number (REN) is used to determine the number of devices which may be connected to the telephone line. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming call. In most areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If this device causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. The telephone company may request that you disconnect the equipment until the problem is resolved.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of this equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

This equipment cannot be used on telephone company-provided coin service. Connection to party line service is subject to state tariffs. Contact the state public utility commission or public service commission for information.

When programming or making test calls to emergency numbers:

- Remain on the line and briefly explain to the dispatcher the reason for the call.
- Perform such activities in the off-peak hours such as early morning or late evenings.

The United States Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent, an identification of the business, other entity, or other individual sending the message, and the telephone number of the sending machine or such business, other entity, or individual. Refer to your fax communication software documentation for details on how to comply with the fax-branding requirement.

FCC declaration of conformity

Responsible party:

Gateway Companies, Inc.
610 Gateway Drive, North Sioux City, SD 57049
(605) 232-2000   Fax: (605) 232-2023

Product:

- Gateway 9315 Server

For unique identification of the product configuration, please submit the 10-digit serial number found on the product to the responsible party.

This device complies with Part 15 of the FCC Rules. Operation of this product is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution	Changes or modifications not expressly approved by Gateway could void the FCC compliance and negate your authority to operate the product.

Canada

Industry Canada (IC)
Unintentional emitter per ICES-003

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe A prescrites dans le règlement sur le brouillage radioélectrique édicté par Industrie Canada.

Telecommunications per Industry Canada CS03
(for products fitted with an IC-compliant modem)

The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operation, and safety requirements. The Department does not guarantee the equipment will operate to the users' satisfaction.

Before installing this equipment, users should make sure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should make sure, for their own protection, that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Warning	To avoid electrical shock or equipment malfunction do not attempt to make electrical ground connections by yourself. Contact the appropriate inspection authority or an electrician, as appropriate.

The **Ringer Equivalence Number** (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed 5.

Laser safety statement

All Gateway systems equipped with CD and DVD drives comply with the appropriate safety standards, including IEC 825. The laser devices in these components are classified as "Class 1 Laser Products" under a US Department of Health and Human Services (DHHS) Radiation Performance Standard. Should the unit ever need servicing, contact an authorized service location.

Warning

Use of controls or adjustments or performance of procedures other than those specified in this manual may result in hazardous radiation exposure. To prevent exposure to laser beams, do not try to open the enclosure of a CD or DVD drive.

California Proposition 65 Warning

Warning

This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects, or reproductive harm.

Notices

Index

U

uninterruptible power supply (UPS) 12
updating
    baseboard management controller
         firmware 32
    BIOS 93
    firmware 32
UPS 12
USB ports
    internal connector 5, 6
    location 2, 3
user password 29
utilities
    BIOS Setup 91

V

VGA port 2, 3
Video
    connectors 6

W

Web site
    Gateway 7

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